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PATENT & TRADEMARK OFFICE

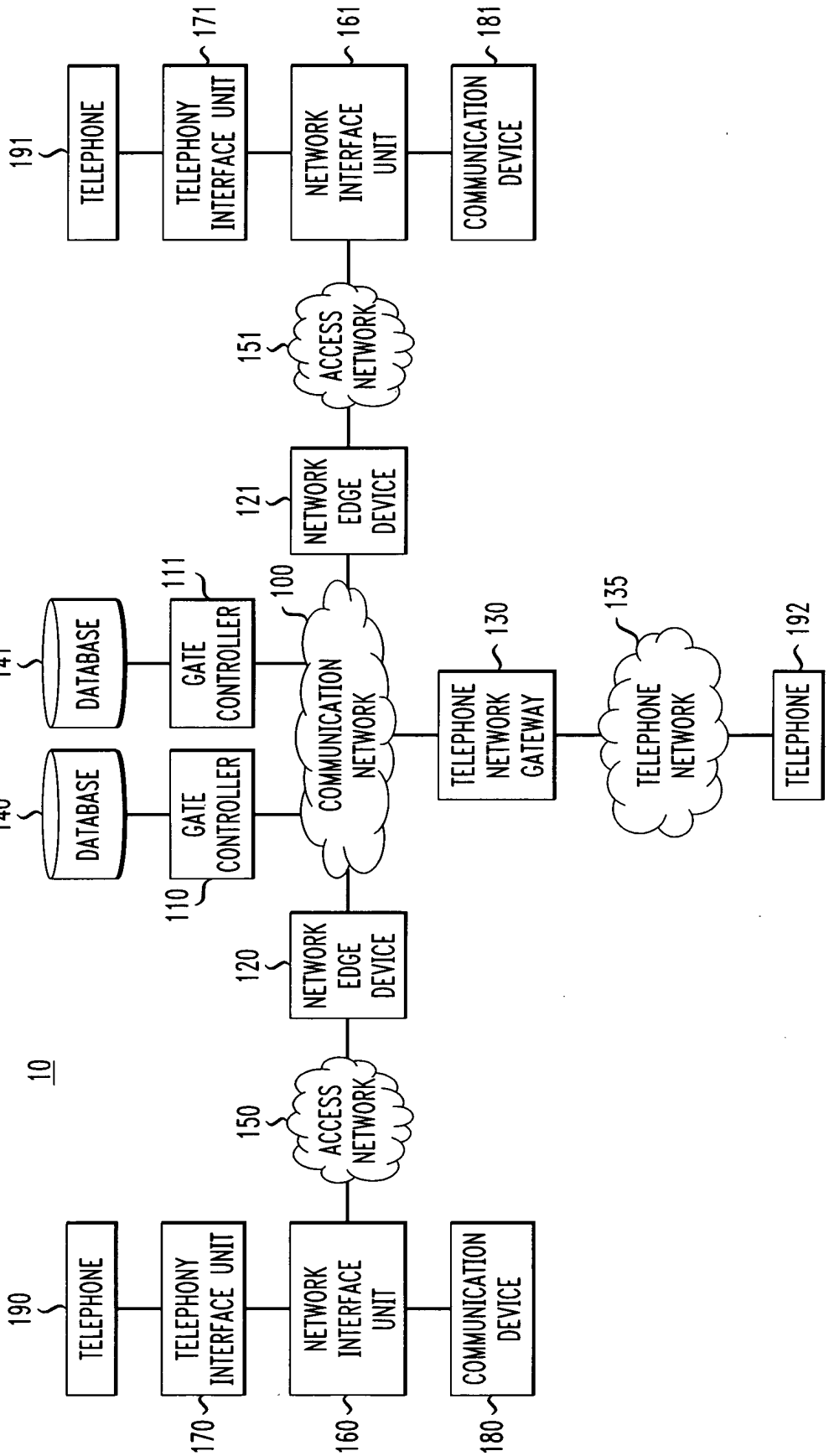


FIG. 1

FIG. 2

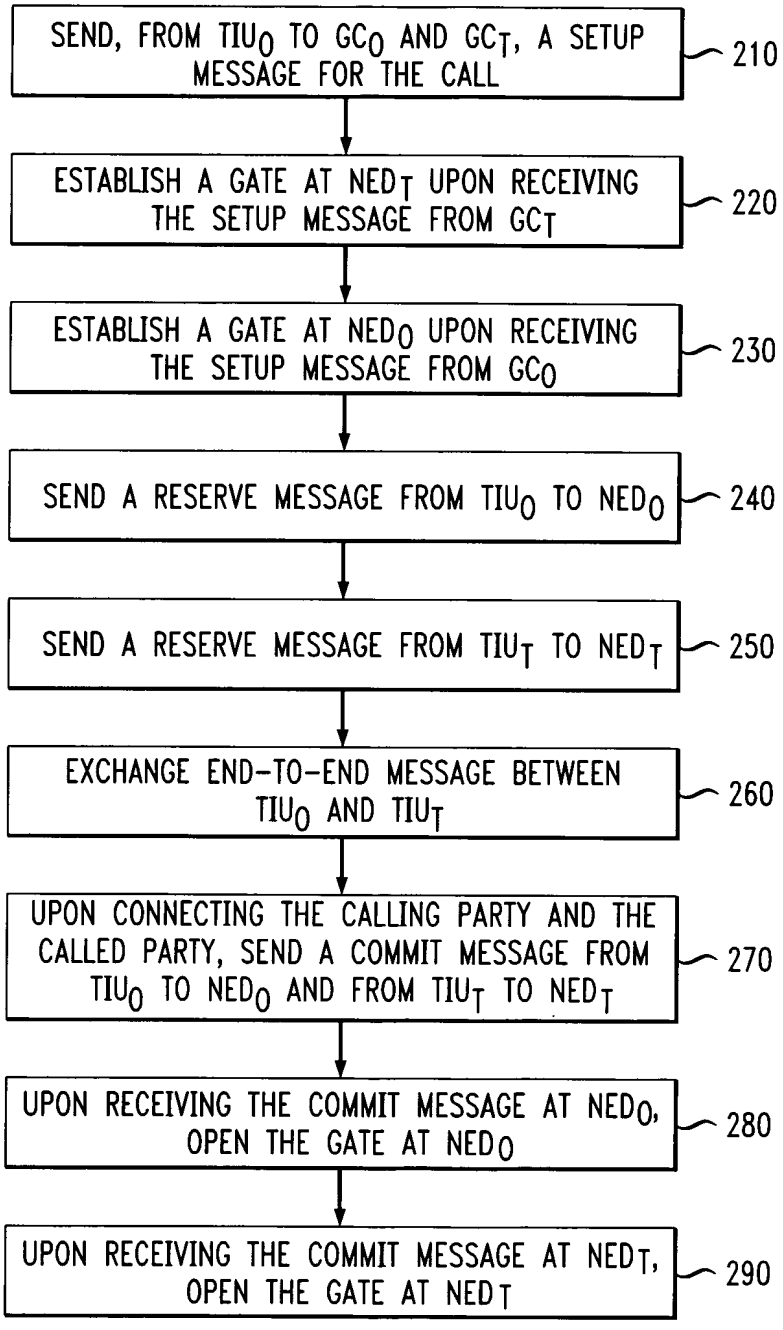

SEND, FROM TIU_O TO GC_O AND GC_T, A SETUP MESSAGE FOR THE CALL
210
ESTABLISH A GATE AT NED_T UPON RECEIVING THE SETUP MESSAGE FROM GC_T
220
ESTABLISH A GATE AT NED_O UPON RECEIVING THE SETUP MESSAGE FROM GC_O
230
SEND A RESERVE MESSAGE FROM TIU_O TO NED_O
240
SEND A RESERVE MESSAGE FROM TIU_T TO NED_T
250
EXCHANGE END-TO-END MESSAGE BETWEEN TIU_O AND TIU_T
260
UPON CONNECTING THE CALLING PARTY AND THE CALLED PARTY, SEND A COMMIT MESSAGE FROM TIU_O TO NED_O AND FROM TIU_T TO NED_T
270
UPON RECEIVING THE COMMIT MESSAGE AT NED_O, OPEN THE GATE AT NED_O
280
UPON RECEIVING THE COMMIT MESSAGE AT NED_T, OPEN THE GATE AT NED_T
290

FIG. 3

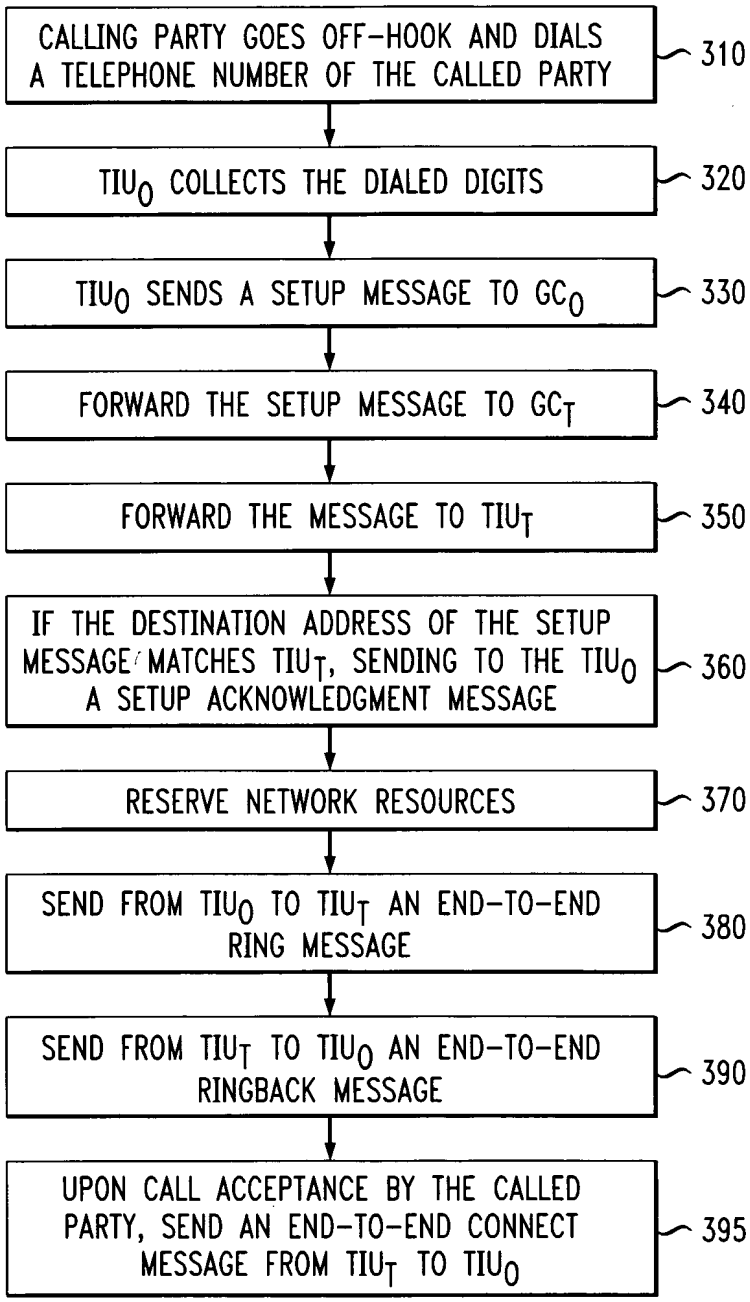

CALLING PARTY GOES OFF-HOOK AND DIALS A TELEPHONE NUMBER OF THE CALLED PARTY
310
TIU_O COLLECTS THE DIALED DIGITS
320
TIU_O SENDS A SETUP MESSAGE TO GC_O
330
FORWARD THE SETUP MESSAGE TO GC_T
340
FORWARD THE MESSAGE TO TIU_T
350
IF THE DESTINATION ADDRESS OF THE SETUP MESSAGE MATCHES TIU_T, SENDING TO THE TIU_O A SETUP ACKNOWLEDGMENT MESSAGE
360
RESERVE NETWORK RESOURCES
370
SEND FROM TIU_O TO TIU_T AN END-TO-END RING MESSAGE
380
SEND FROM TIU_T TO TIU_O AN END-TO-END RINGBACK MESSAGE
390
UPON CALL ACCEPTANCE BY THE CALLED PARTY, SEND AN END-TO-END CONNECT MESSAGE FROM TIU_T TO TIU_O
395

FIG. 4

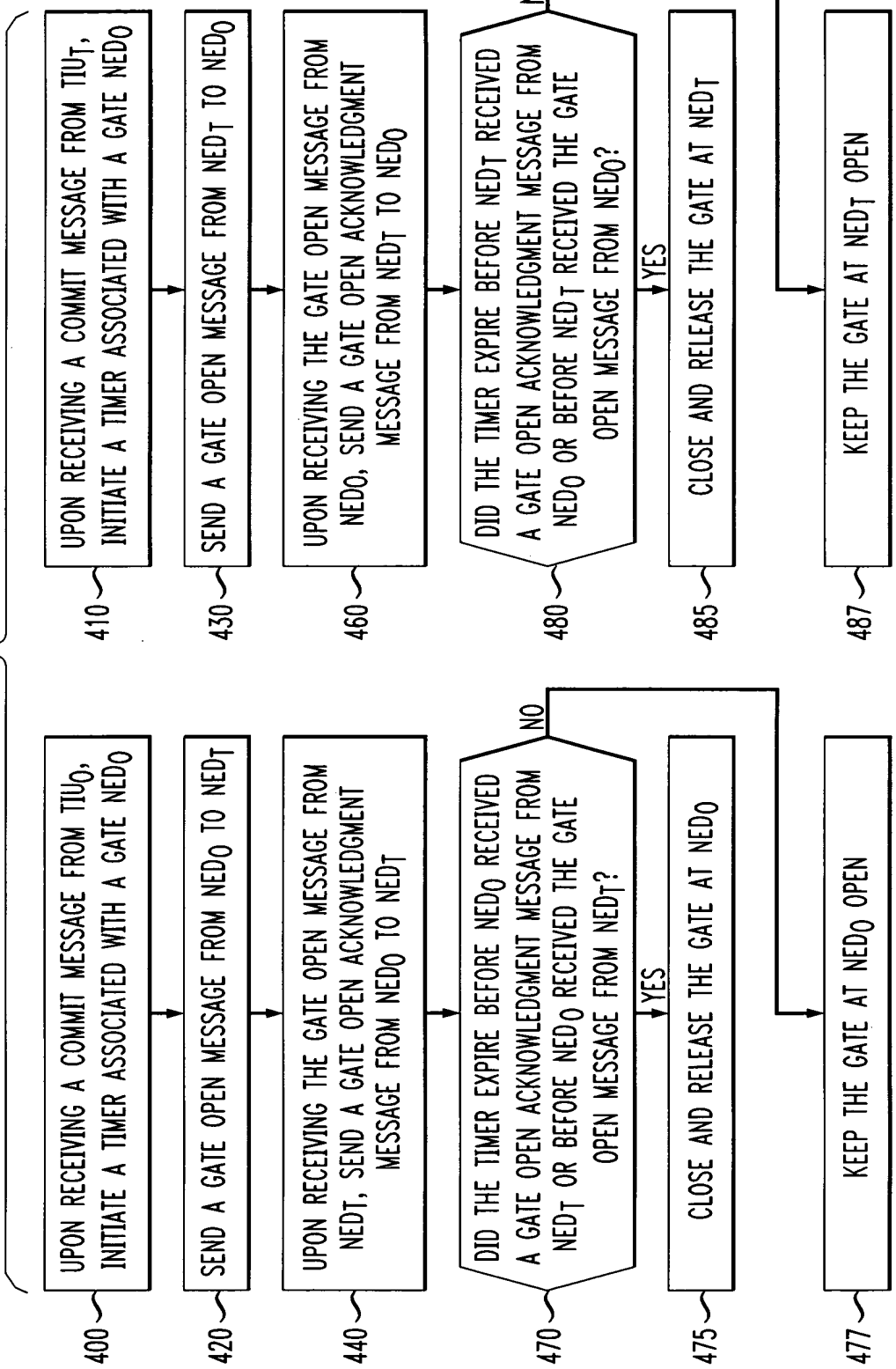

400
UPON RECEIVING A COMMIT MESSAGE FROM TIUO, INITIATE A TIMER ASSOCIATED WITH A GATE NEDO
420
SEND A GATE OPEN MESSAGE FROM NEDO TO NEDT
440
UPON RECEIVING THE GATE OPEN MESSAGE FROM NEDT, SEND A GATE OPEN ACKNOWLEDGMENT MESSAGE FROM NEDO TO NEDT
470
DID THE TIMER EXPIRE BEFORE NEDO RECEIVED A GATE OPEN ACKNOWLEDGMENT MESSAGE FROM NEDT OR BEFORE NEDO RECEIVED THE GATE OPEN MESSAGE FROM NEDT?
NO
YES
475
CLOSE AND RELEASE THE GATE AT NEDO
477
KEEP THE GATE AT NEDO OPEN
410
UPON RECEIVING A COMMIT MESSAGE FROM TIUT, INITIATE A TIMER ASSOCIATED WITH A GATE NEDO
430
SEND A GATE OPEN MESSAGE FROM NEDT TO NEDO
460
UPON RECEIVING THE GATE OPEN MESSAGE FROM NEDO, SEND A GATE OPEN ACKNOWLEDGMENT MESSAGE FROM NEDT TO NEDO
480
DID THE TIMER EXPIRE BEFORE NEDT RECEIVED A GATE OPEN ACKNOWLEDGMENT MESSAGE FROM NEDO OR BEFORE NEDT RECEIVED THE GATE OPEN MESSAGE FROM NEDO?
NO
YES
485
CLOSE AND RELEASE THE GATE AT NEDT
487
KEEP THE GATE AT NEDT OPEN

FIG. 5

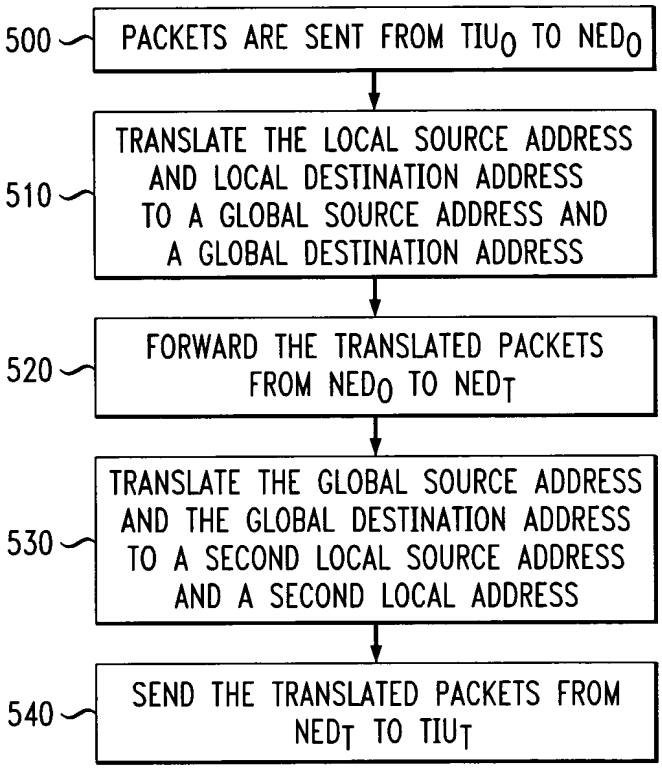

500
PACKETS ARE SENT FROM TIU$_O$ TO NED$_O$
510
TRANSLATE THE LOCAL SOURCE ADDRESS AND LOCAL DESTINATION ADDRESS TO A GLOBAL SOURCE ADDRESS AND A GLOBAL DESTINATION ADDRESS
520
FORWARD THE TRANSLATED PACKETS FROM NED$_O$ TO NED$_T$
530
TRANSLATE THE GLOBAL SOURCE ADDRESS AND THE GLOBAL DESTINATION ADDRESS TO A SECOND LOCAL SOURCE ADDRESS AND A SECOND LOCAL ADDRESS
540
SEND THE TRANSLATED PACKETS FROM NED$_T$ TO TIU$_T$

FIG. 6

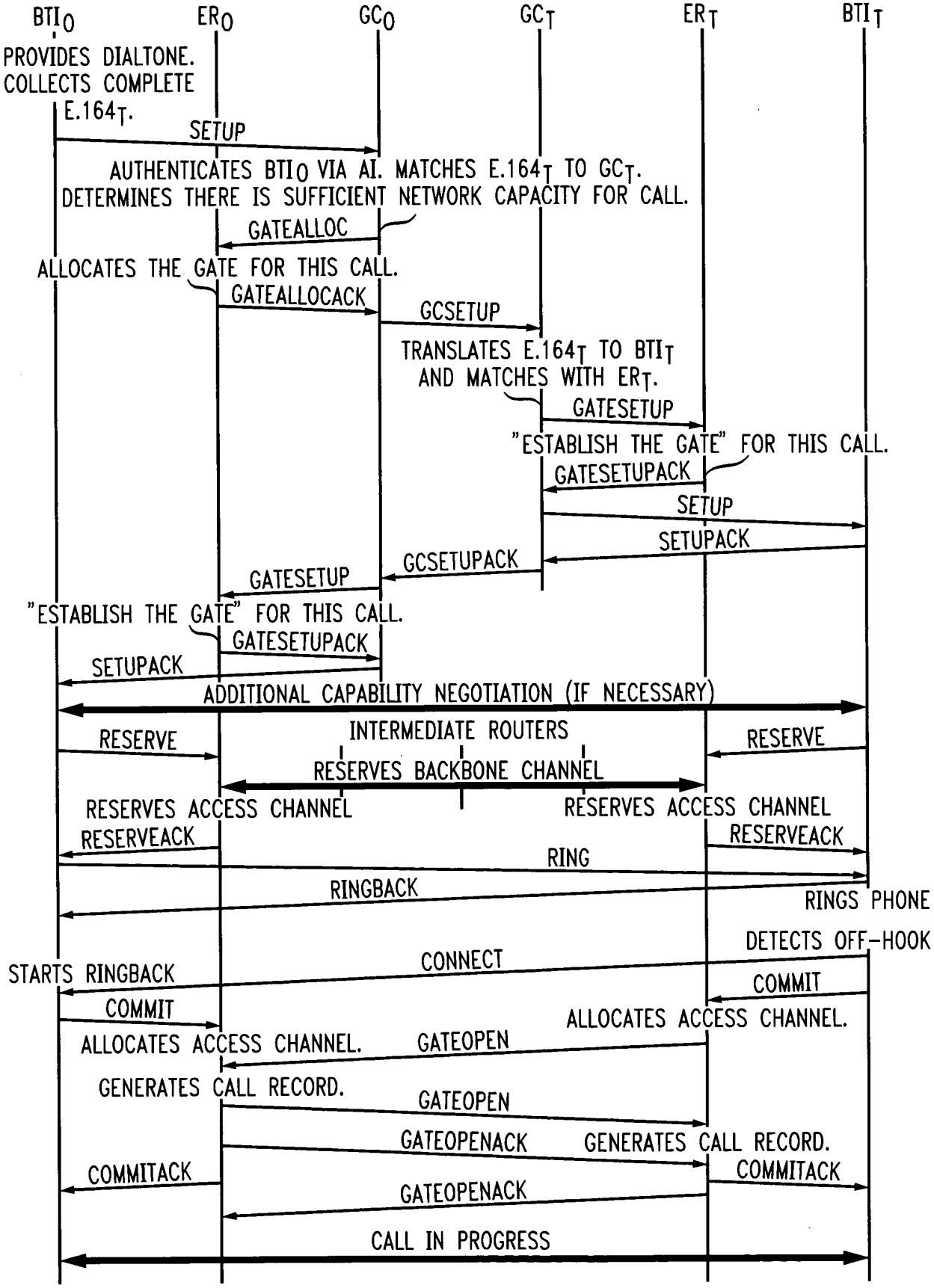

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
PROVIDES DIALTONE.
COLLECTS COMPLETE E.164$_T$.
SETUP
AUTHENTICATES BTI$_O$ VIA AI. MATCHES E.164$_T$ TO GC$_T$.
DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GATEALLOC
ALLOCATES THE GATE FOR THIS CALL.
GATEALLOCACK
GCSETUP
TRANSLATES E.164$_T$ TO BTI$_T$
AND MATCHES WITH ER$_T$.
GATESETUP
"ESTABLISH THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
SETUPACK
GCSETUPACK
GATESETUP
"ESTABLISH THE GATE" FOR THIS CALL.
GATESETUPACK
SETUPACK
ADDITIONAL CAPABILITY NEGOTIATION (IF NECESSARY)
RESERVE
INTERMEDIATE ROUTERS
RESERVES BACKBONE CHANNEL
RESERVE
RESERVES ACCESS CHANNEL
RESERVES ACCESS CHANNEL
RESERVEACK
RESERVEACK
RING
RINGBACK
RINGS PHONE
DETECTS OFF-HOOK
STARTS RINGBACK
CONNECT
COMMIT
COMMIT
ALLOCATES ACCESS CHANNEL.
ALLOCATES ACCESS CHANNEL.
GATEOPEN
GENERATES CALL RECORD.
GATEOPEN
GATEOPENACK
GENERATES CALL RECORD.
COMMITACK
COMMITACK
GATEOPENACK
CALL IN PROGRESS

FIG. 7

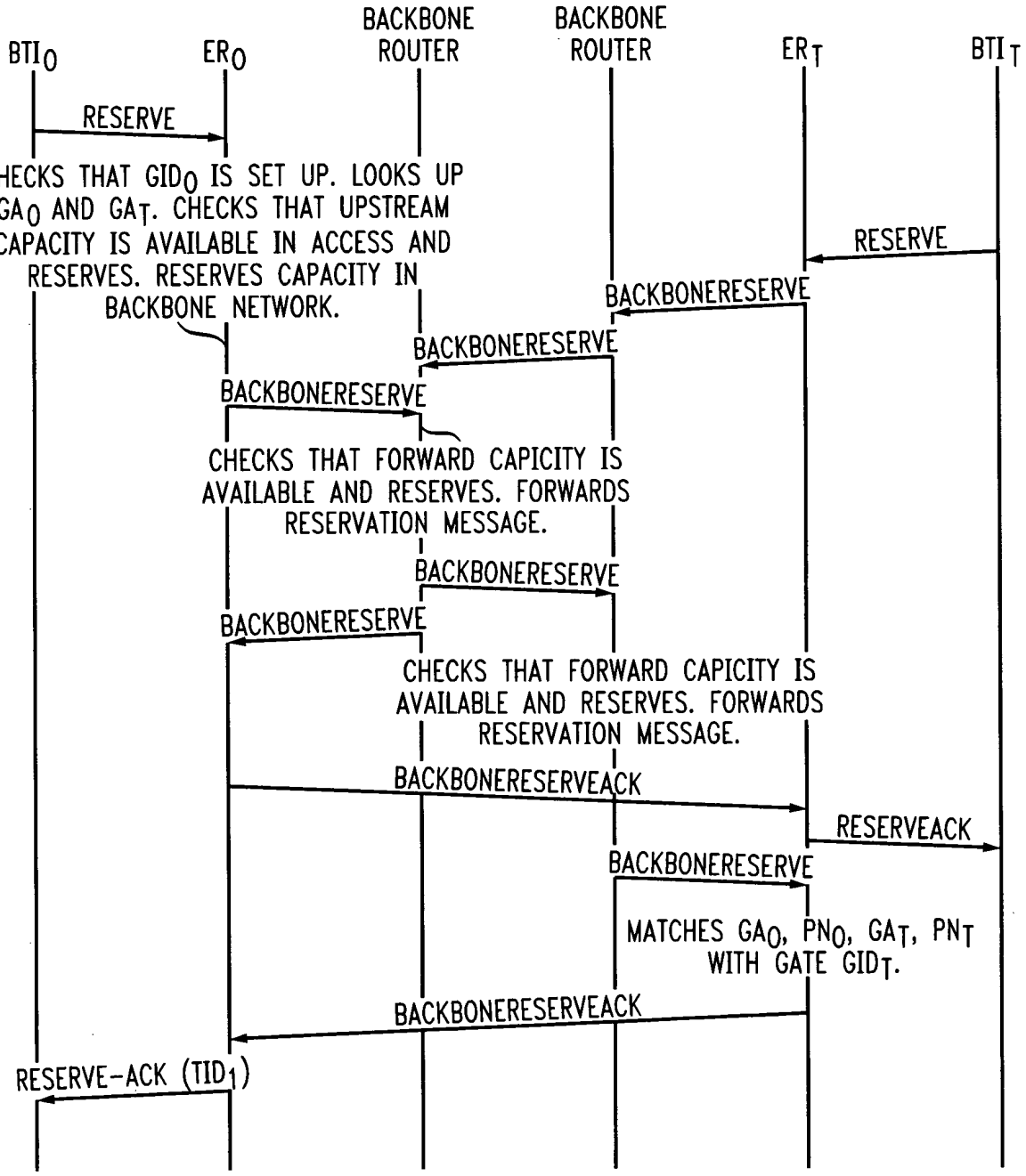

BTI0
ER0
BACKBONE ROUTER
BACKBONE ROUTER
ERT
BTIT
RESERVE
CHECKS THAT GID0 IS SET UP. LOOKS UP GA0 AND GAT. CHECKS THAT UPSTREAM CAPACITY IS AVAILABLE IN ACCESS AND RESERVES. RESERVES CAPACITY IN BACKBONE NETWORK.
RESERVE
BACKBONERESERVE
BACKBONERESERVE
BACKBONERESERVE
CHECKS THAT FORWARD CAPICITY IS AVAILABLE AND RESERVES. FORWARDS RESERVATION MESSAGE.
BACKBONERESERVE
BACKBONERESERVE
CHECKS THAT FORWARD CAPICITY IS AVAILABLE AND RESERVES. FORWARDS RESERVATION MESSAGE.
BACKBONERESERVEACK
RESERVEACK
BACKBONERESERVE
MATCHES GA0, PN0, GAT, PNT WITH GATE GIDT.
BACKBONERESERVEACK
RESERVE-ACK (TID1)

FIG. 8

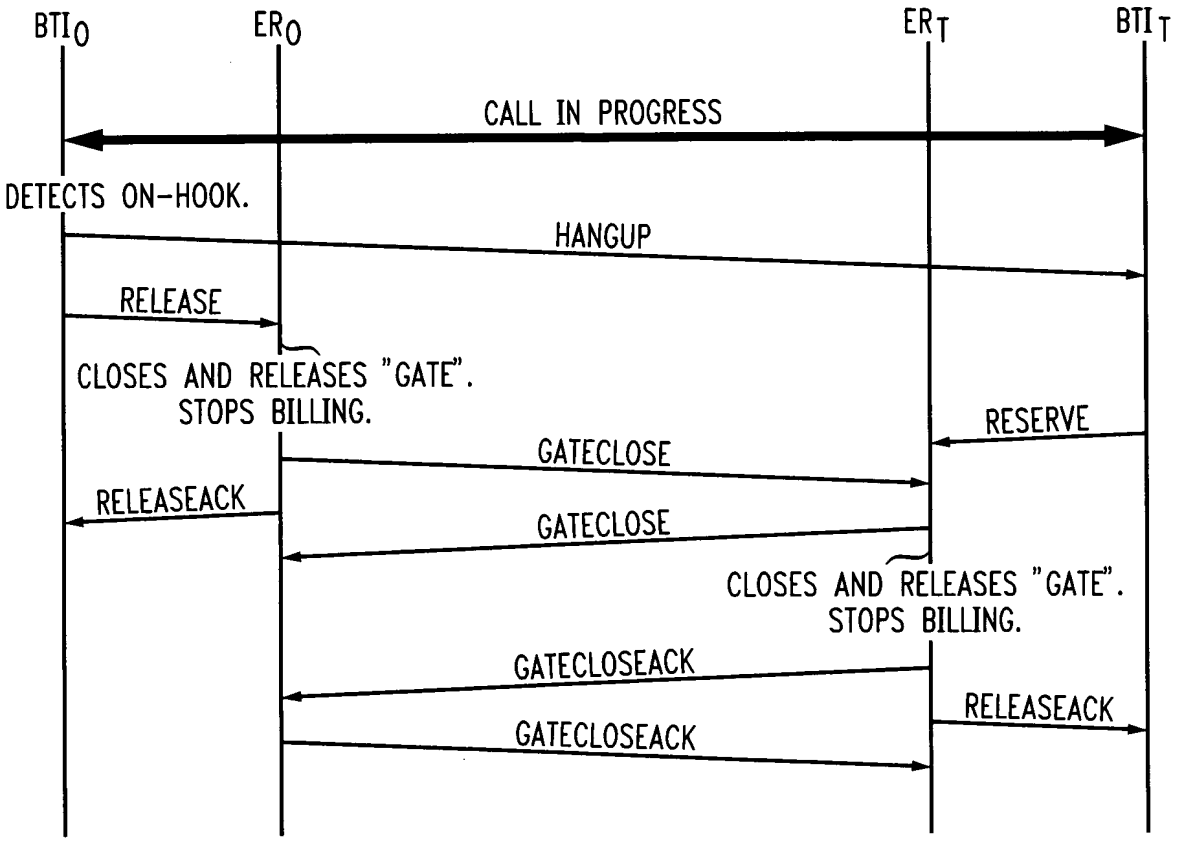

BTI O
ER O
ER T
BTI T
CALL IN PROGRESS
DETECTS ON-HOOK.
HANGUP
RELEASE
CLOSES AND RELEASES "GATE".
STOPS BILLING.
RESERVE
GATECLOSE
RELEASEACK
GATECLOSE
CLOSES AND RELEASES "GATE".
STOPS BILLING.
GATECLOSEACK
RELEASEACK
GATECLOSEACK

FIG. 9

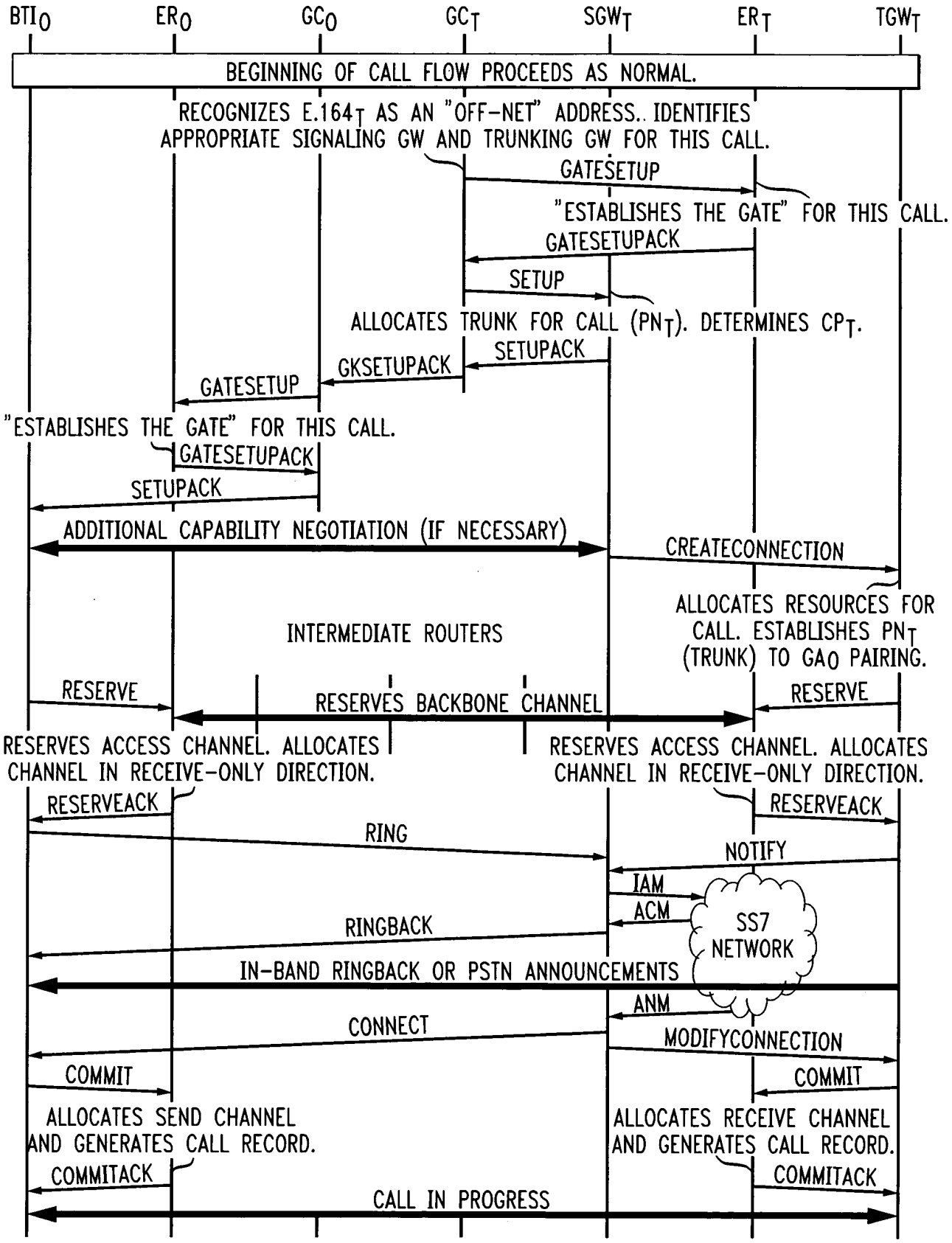

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
SGW$_T$
ER$_T$
TGW$_T$
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
RECOGNIZES E.164$_T$ AS AN "OFF-NET" ADDRESS.. IDENTIFIES APPROPRIATE SIGNALING GW AND TRUNKING GW FOR THIS CALL.
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
ALLOCATES TRUNK FOR CALL (PN$_T$). DETERMINES CP$_T$.
SETUPACK
GKSETUPACK
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUPACK
ADDITIONAL CAPABILITY NEGOTIATION (IF NECESSARY)
CREATECONNECTION
ALLOCATES RESOURCES FOR CALL. ESTABLISHES PN$_T$ (TRUNK) TO GA$_O$ PAIRING.
INTERMEDIATE ROUTERS
RESERVE
RESERVES BACKBONE CHANNEL
RESERVE
RESERVES ACCESS CHANNEL. ALLOCATES CHANNEL IN RECEIVE-ONLY DIRECTION.
RESERVES ACCESS CHANNEL. ALLOCATES CHANNEL IN RECEIVE-ONLY DIRECTION.
RESERVEACK
RESERVEACK
RING
NOTIFY
IAM
ACM
SS7 NETWORK
RINGBACK
IN-BAND RINGBACK OR PSTN ANNOUNCEMENTS
ANM
CONNECT
MODIFYCONNECTION
COMMIT
COMMIT
ALLOCATES SEND CHANNEL AND GENERATES CALL RECORD.
ALLOCATES RECEIVE CHANNEL AND GENERATES CALL RECORD.
COMMITACK
COMMITACK
CALL IN PROGRESS

FIG. 10

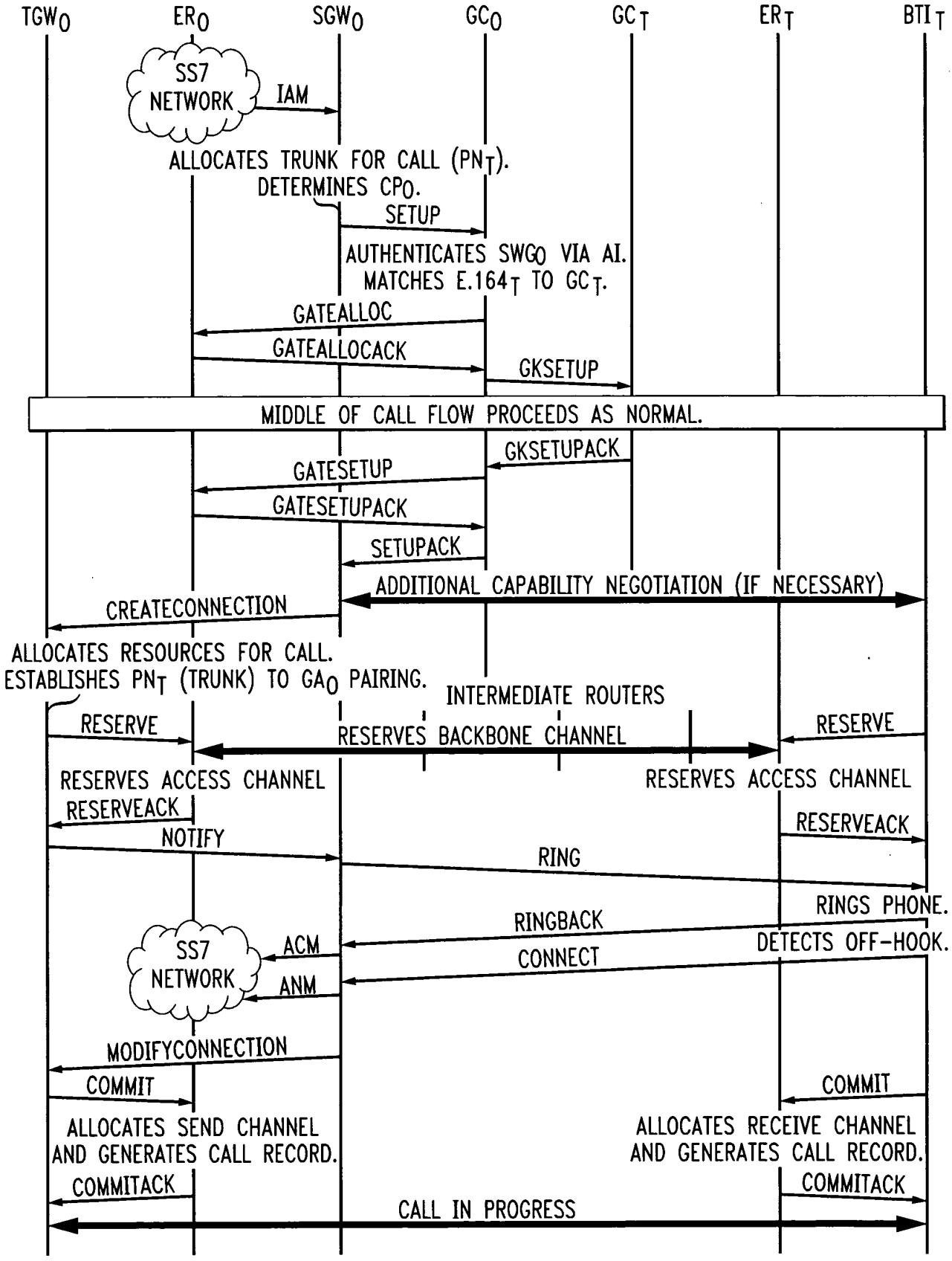

TGW$_O$
ER$_O$
SGW$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
SS7 NETWORK
IAM
ALLOCATES TRUNK FOR CALL (PN$_T$).
DETERMINES CP$_O$.
SETUP
AUTHENTICATES SWG$_O$ VIA AI.
MATCHES E.164$_T$ TO GC$_T$.
GATEALLOC
GATEALLOCACK
GKSETUP
MIDDLE OF CALL FLOW PROCEEDS AS NORMAL.
GKSETUPACK
GATESETUP
GATESETUPACK
SETUPACK
ADDITIONAL CAPABILITY NEGOTIATION (IF NECESSARY)
CREATECONNECTION
ALLOCATES RESOURCES FOR CALL.
ESTABLISHES PN$_T$ (TRUNK) TO GA$_O$ PAIRING.
INTERMEDIATE ROUTERS
RESERVE
RESERVES BACKBONE CHANNEL
RESERVE
RESERVES ACCESS CHANNEL
RESERVES ACCESS CHANNEL
RESERVEACK
RESERVEACK
NOTIFY
RING
RINGS PHONE.
RINGBACK
SS7 NETWORK
ACM
DETECTS OFF-HOOK.
CONNECT
ANM
MODIFYCONNECTION
COMMIT
COMMIT
ALLOCATES SEND CHANNEL
AND GENERATES CALL RECORD.
ALLOCATES RECEIVE CHANNEL
AND GENERATES CALL RECORD.
COMMITACK
COMMITACK
CALL IN PROGRESS

FIG. 11

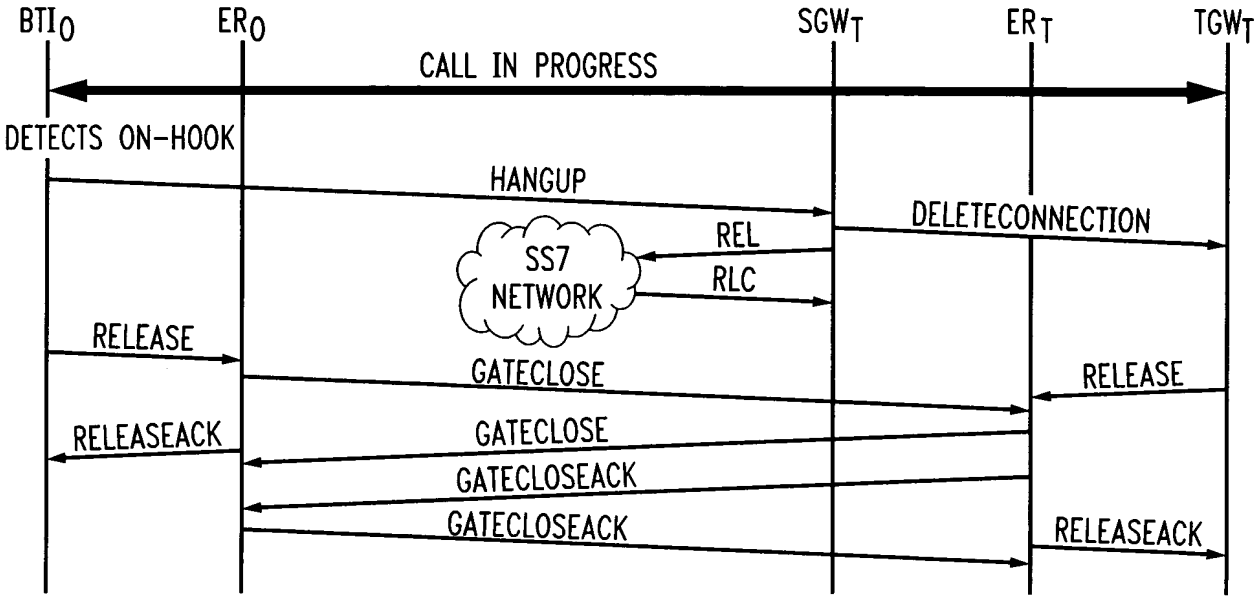

BTI0
ER0
SGWT
ERT
TGWT
CALL IN PROGRESS
DETECTS ON-HOOK
HANGUP
DELETECONNECTION
REL
SS7 NETWORK
RLC
RELEASE
GATECLOSE
RELEASE
RELEASEACK
GATECLOSE
GATECLOSEACK
GATECLOSEACK
RELEASEACK

FIG. 12

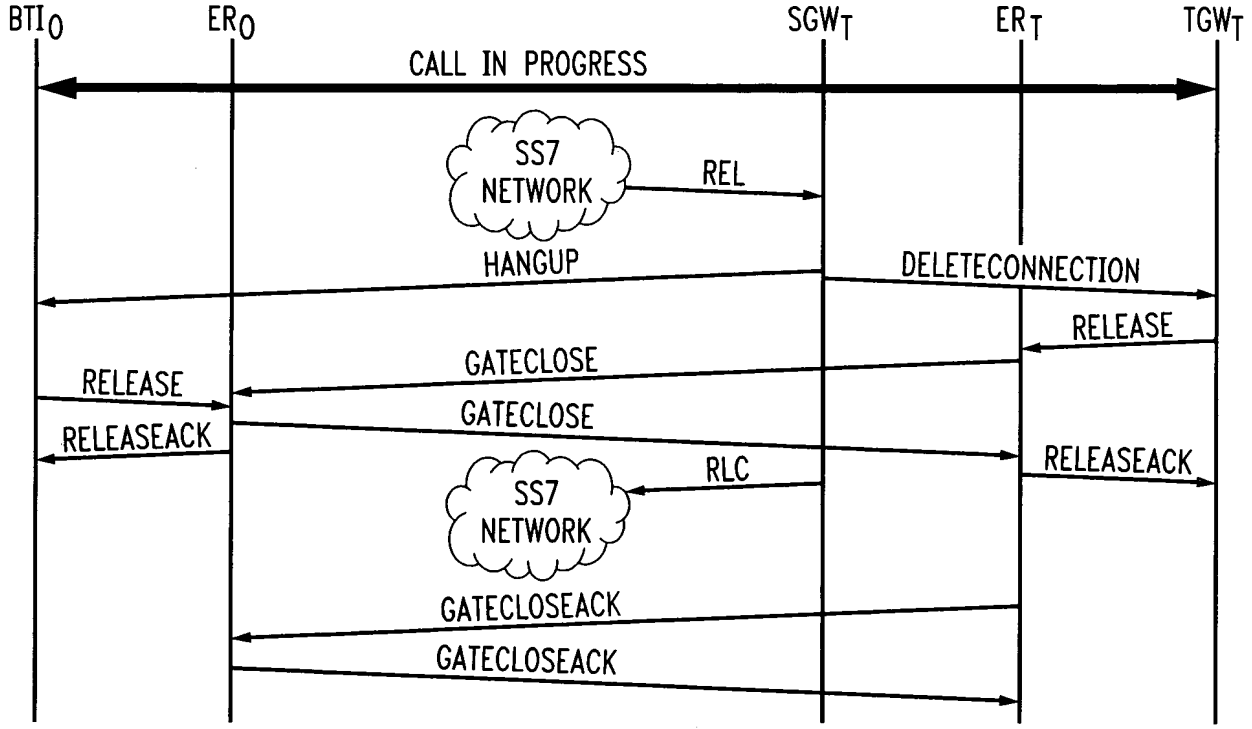

BTI0
ER0
SGWT
ERT
TGWT
CALL IN PROGRESS
SS7 NETWORK
REL
HANGUP
DELETECONNECTION
RELEASE
GATECLOSE
RELEASE
GATECLOSE
RELEASEACK
RELEASEACK
RLC
SS7 NETWORK
GATECLOSEACK
GATECLOSEACK

FIG. 13

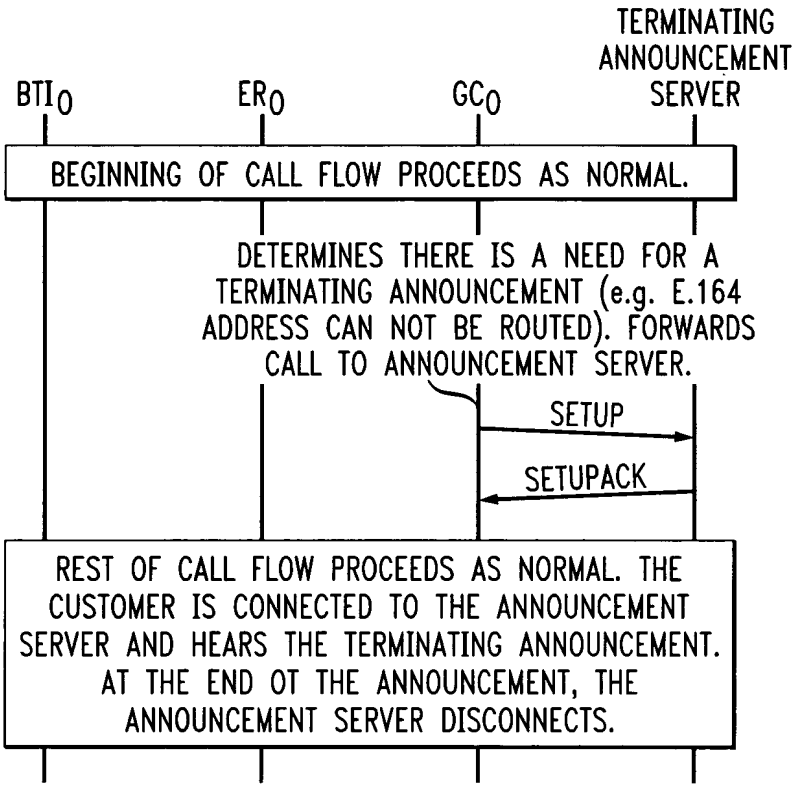

TERMINATING ANNOUNCEMENT SERVER
BTI0
ER0
GC0
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
DETERMINES THERE IS A NEED FOR A TERMINATING ANNOUNCEMENT (e.g. E.164 ADDRESS CAN NOT BE ROUTED). FORWARDS CALL TO ANNOUNCEMENT SERVER.
SETUP
SETUPACK
REST OF CALL FLOW PROCEEDS AS NORMAL. THE CUSTOMER IS CONNECTED TO THE ANNOUNCEMENT SERVER AND HEARS THE TERMINATING ANNOUNCEMENT. AT THE END OT THE ANNOUNCEMENT, THE ANNOUNCEMENT SERVER DISCONNECTS.

FIG. 14

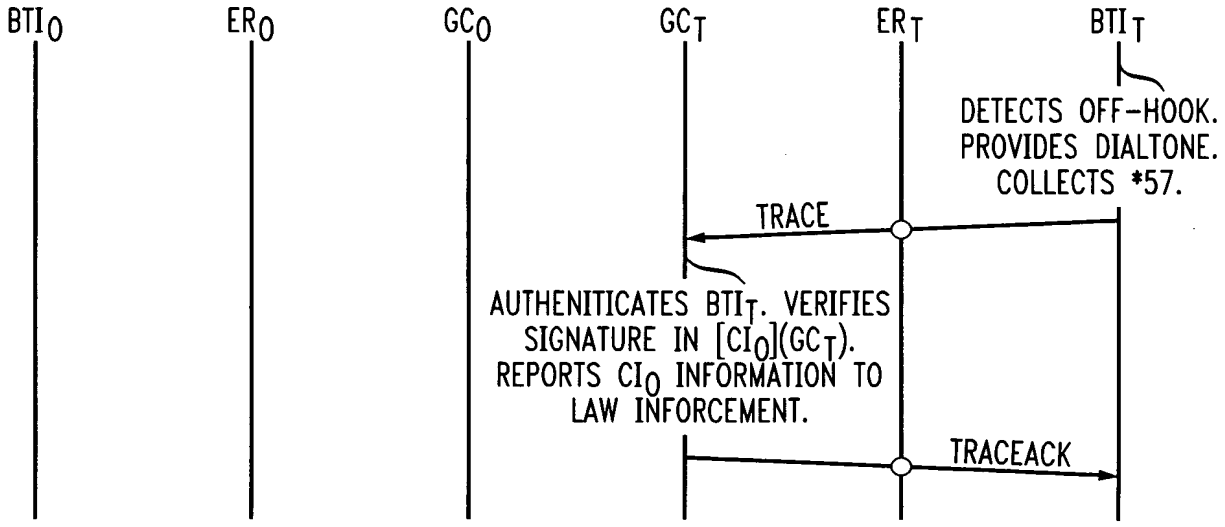

BTI0
ER0
GC0
GCT
ERT
BTIT
DETECTS OFF-HOOK. PROVIDES DIALTONE. COLLECTS *57.
TRACE
AUTHENITICATES BTIT. VERIFIES SIGNATURE IN [CI0](GCT). REPORTS CI0 INFORMATION TO LAW INFORCEMENT.
TRACEACK

FIG. 15

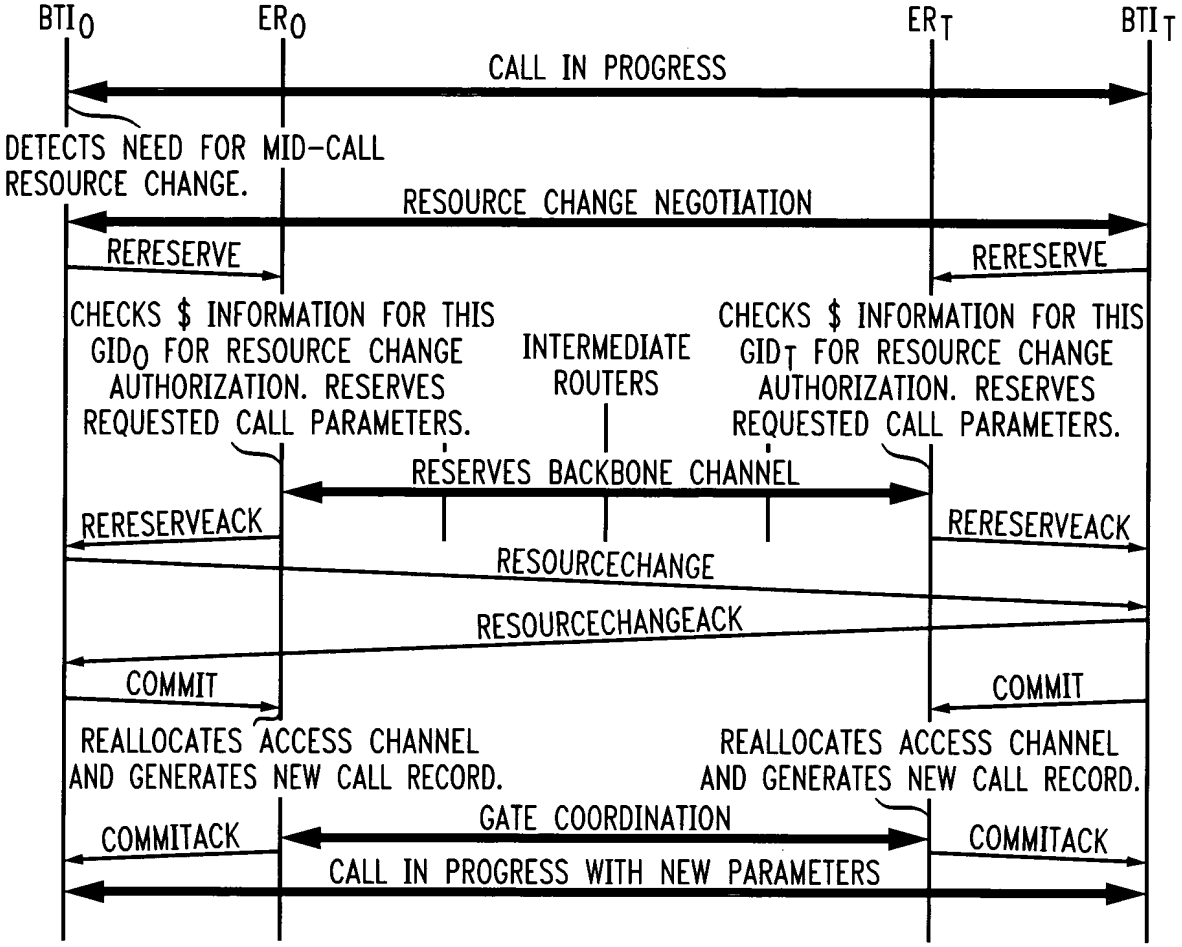

BTI O
ER O
ER T
BTI T
CALL IN PROGRESS
DETECTS NEED FOR MID-CALL RESOURCE CHANGE.
RESOURCE CHANGE NEGOTIATION
RERESERVE
RERESERVE
CHECKS $ INFORMATION FOR THIS GID O FOR RESOURCE CHANGE AUTHORIZATION. RESERVES REQUESTED CALL PARAMETERS.
INTERMEDIATE ROUTERS
CHECKS $ INFORMATION FOR THIS GID T FOR RESOURCE CHANGE AUTHORIZATION. RESERVES REQUESTED CALL PARAMETERS.
RESERVES BACKBONE CHANNEL
RERESERVEACK
RERESERVEACK
RESOURCECHANGE
RESOURCECHANGEACK
COMMIT
COMMIT
REALLOCATES ACCESS CHANNEL AND GENERATES NEW CALL RECORD.
REALLOCATES ACCESS CHANNEL AND GENERATES NEW CALL RECORD.
GATE COORDINATION
COMMITACK
COMMITACK
CALL IN PROGRESS WITH NEW PARAMETERS

FIG. 16

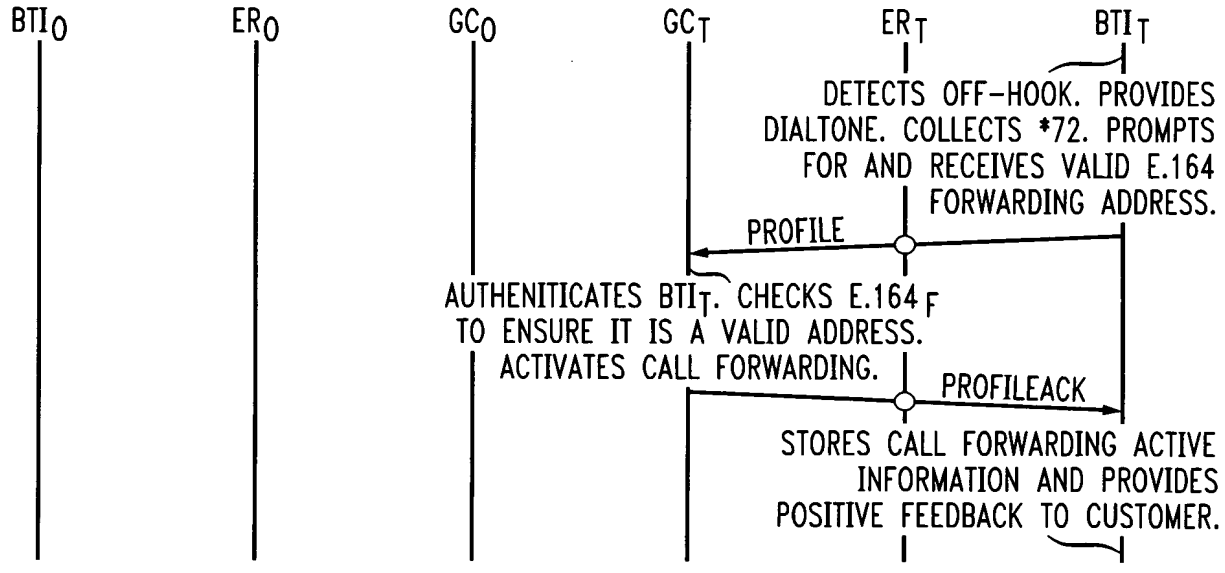

BTI O
ER O
GC O
GC T
ER T
BTI T
DETECTS OFF-HOOK. PROVIDES DIALTONE. COLLECTS *72. PROMPTS FOR AND RECEIVES VALID E.164 FORWARDING ADDRESS.
PROFILE
AUTHENITICATES BTI T. CHECKS E.164 F TO ENSURE IT IS A VALID ADDRESS. ACTIVATES CALL FORWARDING.
PROFILEACK
STORES CALL FORWARDING ACTIVE INFORMATION AND PROVIDES POSITIVE FEEDBACK TO CUSTOMER.

FIG. 17

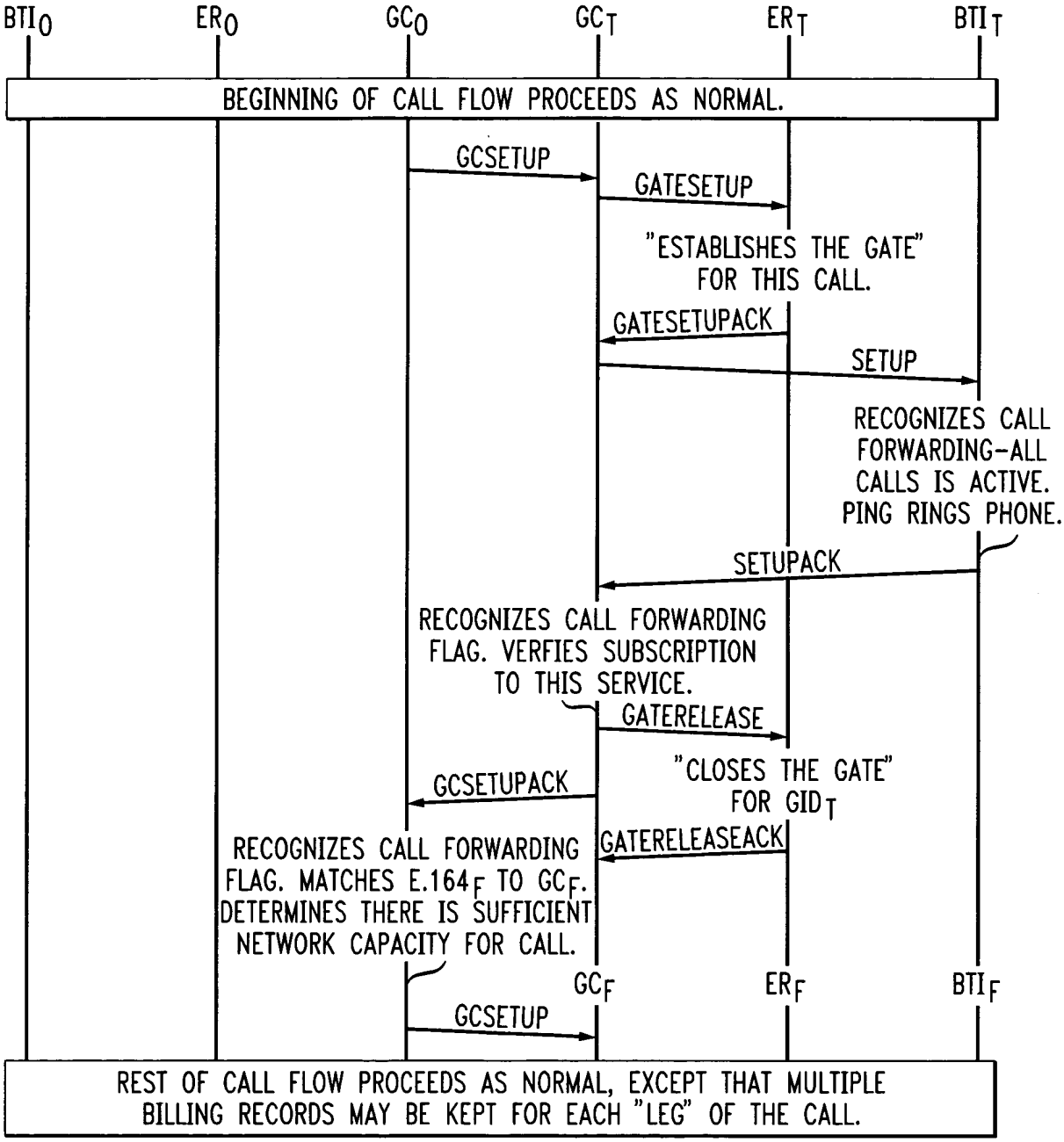

BTI0
ER0
GC0
GCT
ERT
BTIT
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUP
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
RECOGNIZES CALL FORWARDING-ALL CALLS IS ACTIVE. PING RINGS PHONE.
SETUPACK
RECOGNIZES CALL FORWARDING FLAG. VERFIES SUBSCRIPTION TO THIS SERVICE.
GATERELEASE
"CLOSES THE GATE" FOR GIDT
GCSETUPACK
GATERELEASEACK
RECOGNIZES CALL FORWARDING FLAG. MATCHES E.164F TO GCF. DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GCF
ERF
BTIF
GCSETUP
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 18

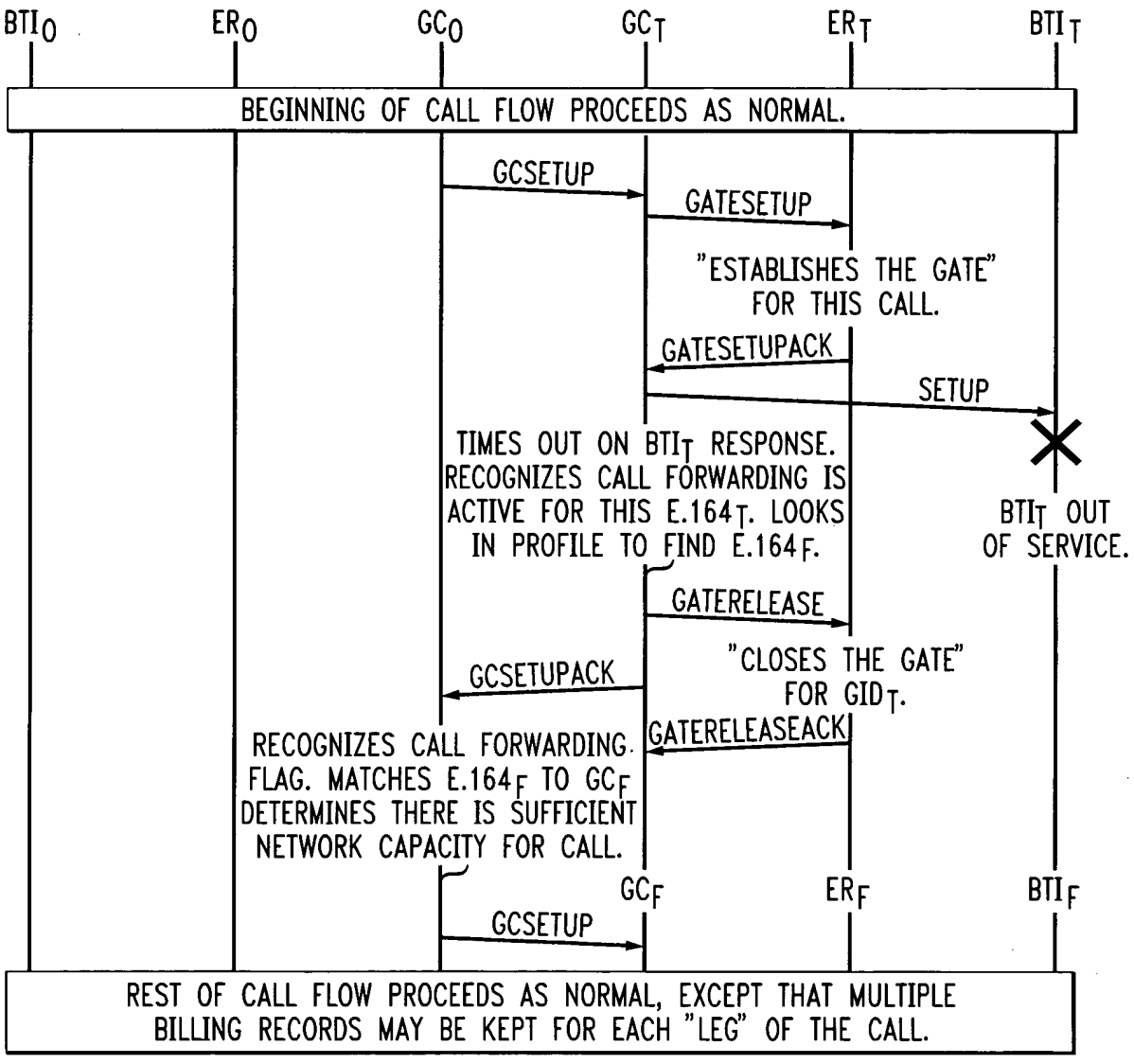

BTI0
ER0
GC0
GCT
ERT
BTIT
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUP
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
TIMES OUT ON BTIT RESPONSE. RECOGNIZES CALL FORWARDING IS ACTIVE FOR THIS E.164T. LOOKS IN PROFILE TO FIND E.164F.
BTIT OUT OF SERVICE.
GATERELEASE
"CLOSES THE GATE" FOR GIDT.
GCSETUPACK
GATERELEASEACK
RECOGNIZES CALL FORWARDING FLAG. MATCHES E.164F TO GCF DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GCF
ERF
BTIF
GCSETUP
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 19

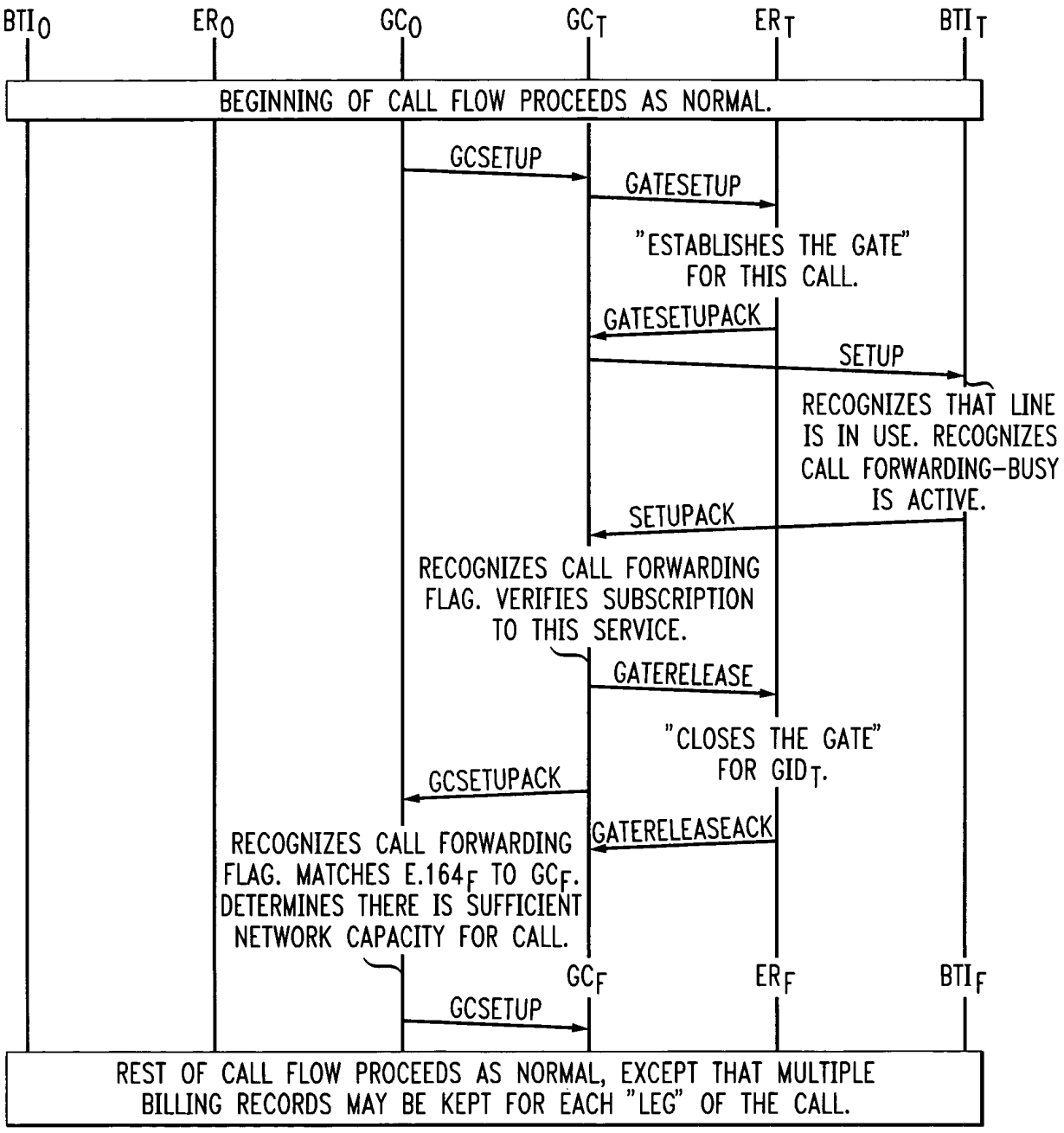

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUP
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
RECOGNIZES THAT LINE IS IN USE. RECOGNIZES CALL FORWARDING-BUSY IS ACTIVE.
SETUPACK
RECOGNIZES CALL FORWARDING FLAG. VERIFIES SUBSCRIPTION TO THIS SERVICE.
GATERELEASE
"CLOSES THE GATE" FOR GID$_T$.
GCSETUPACK
GATERELEASEACK
RECOGNIZES CALL FORWARDING FLAG. MATCHES E.164$_F$ TO GC$_F$. DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GC$_F$
ER$_F$
BTI$_F$
GCSETUP
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 20

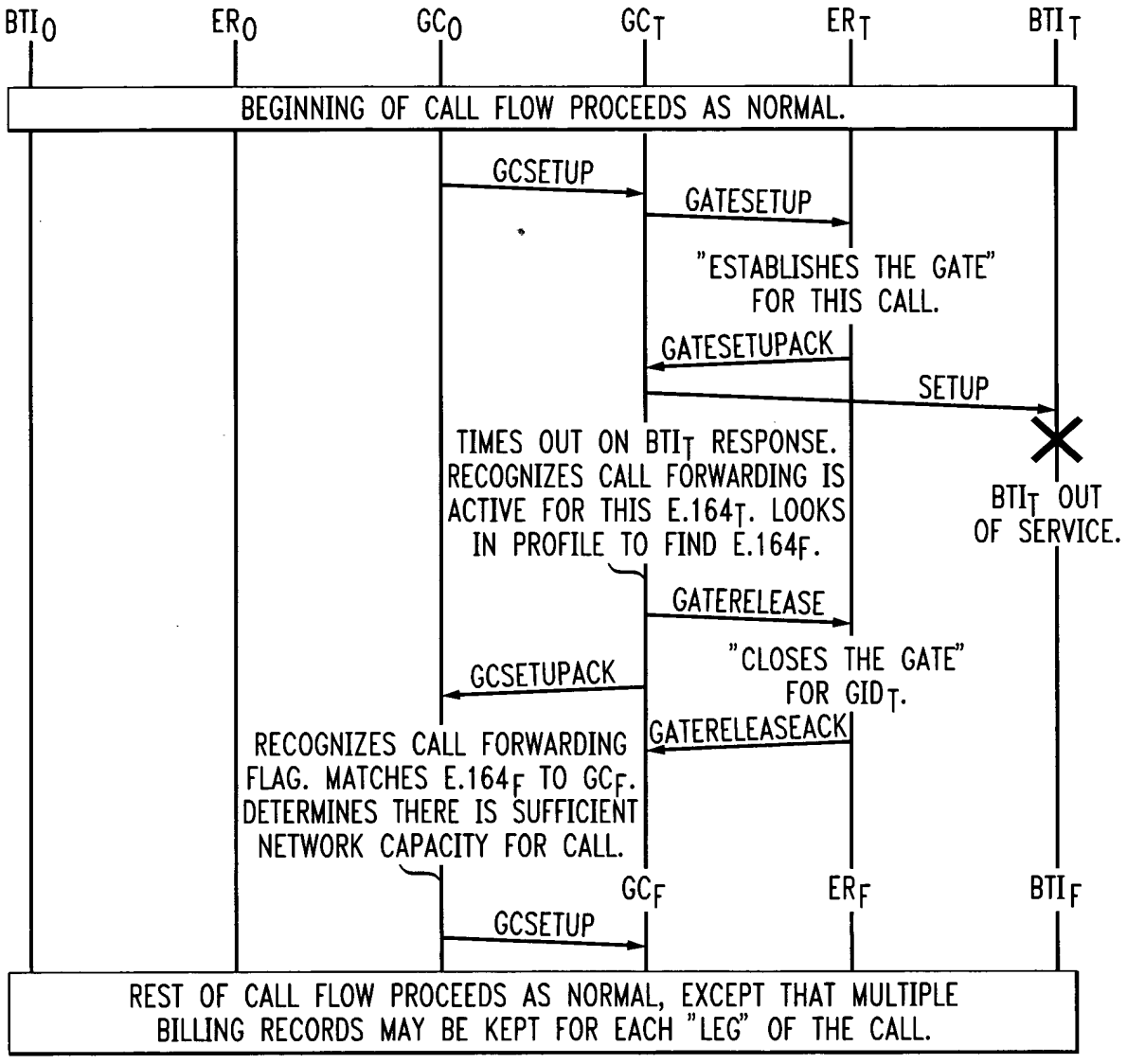

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUP
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
TIMES OUT ON BTI$_T$ RESPONSE. RECOGNIZES CALL FORWARDING IS ACTIVE FOR THIS E.164$_T$. LOOKS IN PROFILE TO FIND E.164$_F$.
BTI$_T$ OUT OF SERVICE.
GATERELEASE
"CLOSES THE GATE" FOR GID$_T$.
GCSETUPACK
GATERELEASEACK
RECOGNIZES CALL FORWARDING FLAG. MATCHES E.164$_F$ TO GC$_F$. DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GC$_F$
ER$_F$
BTI$_F$
GCSETUP
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 21

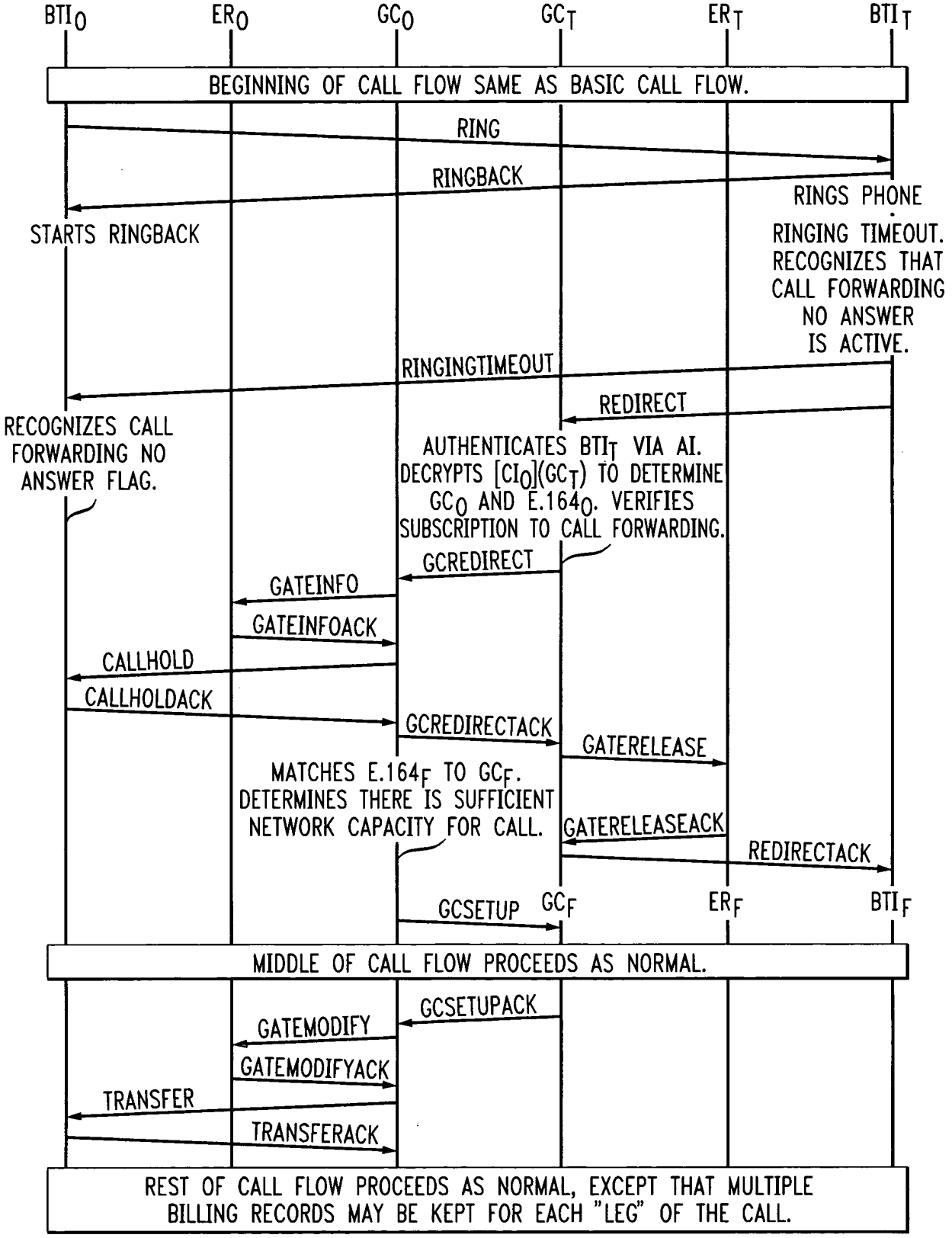

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
BEGINNING OF CALL FLOW SAME AS BASIC CALL FLOW.
RING
RINGBACK
RINGS PHONE
STARTS RINGBACK
RINGING TIMEOUT. RECOGNIZES THAT CALL FORWARDING NO ANSWER IS ACTIVE.
RINGINGTIMEOUT
REDIRECT
RECOGNIZES CALL FORWARDING NO ANSWER FLAG.
AUTHENTICATES BTI$_T$ VIA AI. DECRYPTS [CI$_O$](GC$_T$) TO DETERMINE GC$_O$ AND E.164$_O$. VERIFIES SUBSCRIPTION TO CALL FORWARDING.
GCREDIRECT
GATEINFO
GATEINFOACK
CALLHOLD
CALLHOLDACK
GCREDIRECTACK
GATERELEASE
MATCHES E.164$_F$ TO GC$_F$. DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GATERELEASEACK
REDIRECTACK
GCSETUP
GC$_F$
ER$_F$
BTI$_F$
MIDDLE OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUPACK
GATEMODIFY
GATEMODIFYACK
TRANSFER
TRANSFERACK
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 22

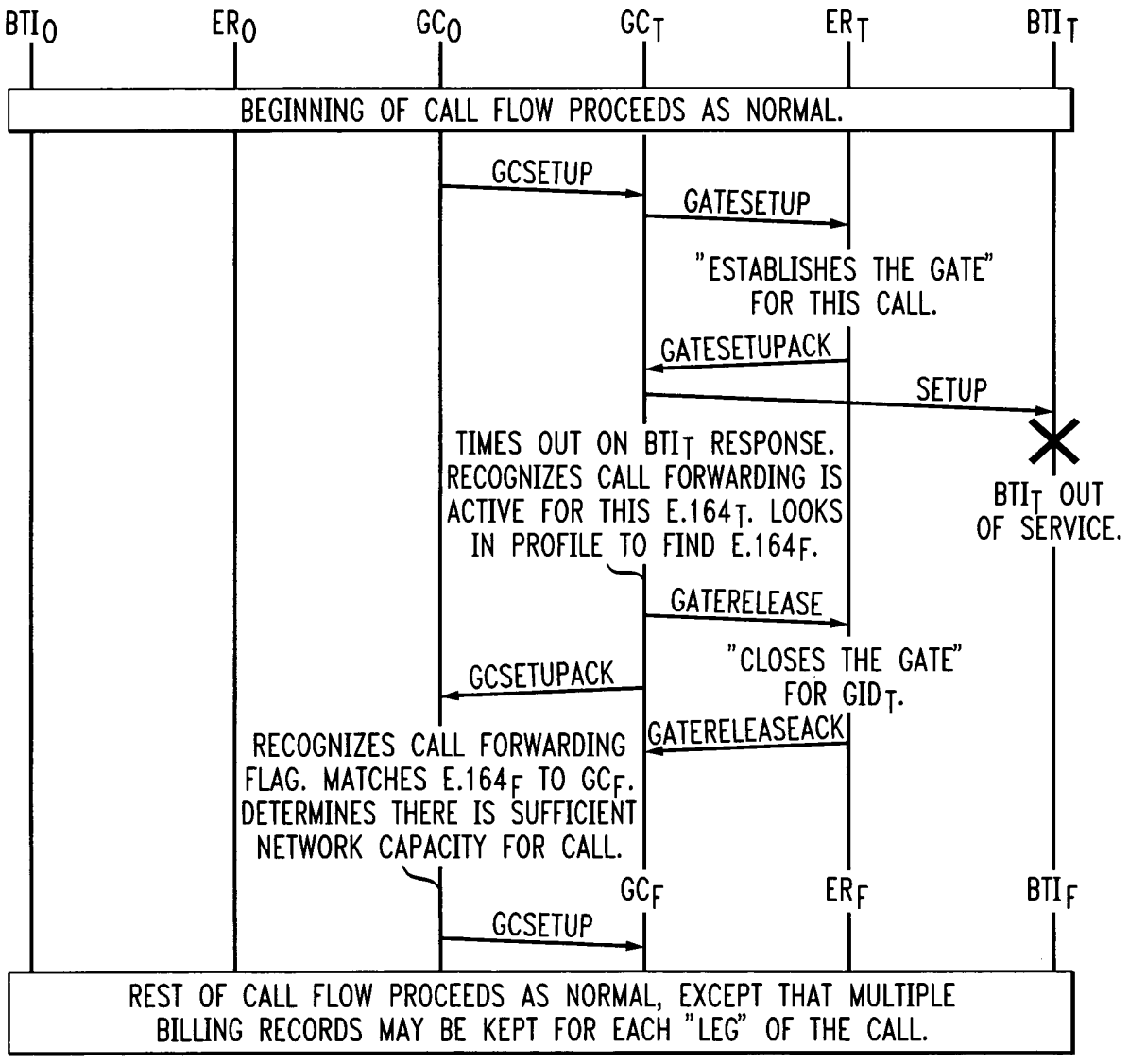

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUP
GATESETUP
"ESTABLISHES THE GATE" FOR THIS CALL.
GATESETUPACK
SETUP
TIMES OUT ON BTI$_T$ RESPONSE. RECOGNIZES CALL FORWARDING IS ACTIVE FOR THIS E.164$_T$. LOOKS IN PROFILE TO FIND E.164$_F$.
BTI$_T$ OUT OF SERVICE.
GATERELEASE
"CLOSES THE GATE" FOR GID$_T$.
GCSETUPACK
GATERELEASEACK
RECOGNIZES CALL FORWARDING FLAG. MATCHES E.164$_F$ TO GC$_F$. DETERMINES THERE IS SUFFICIENT NETWORK CAPACITY FOR CALL.
GC$_F$
ER$_F$
BTI$_F$
GCSETUP
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 23

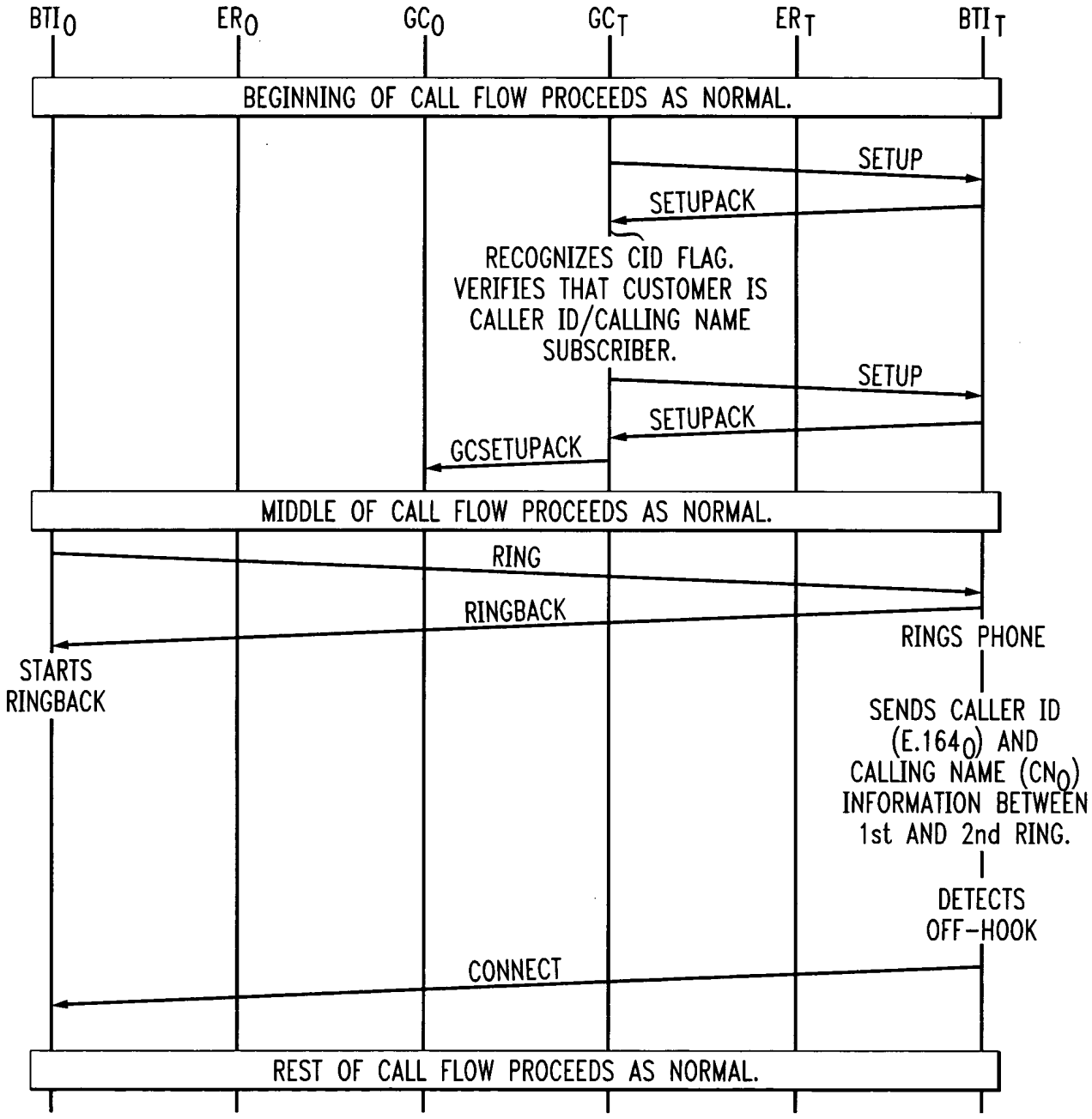

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
BEGINNING OF CALL FLOW PROCEEDS AS NORMAL.
SETUP
SETUPACK
RECOGNIZES CID FLAG.
VERIFIES THAT CUSTOMER IS
CALLER ID/CALLING NAME
SUBSCRIBER.
SETUP
SETUPACK
GCSETUPACK
MIDDLE OF CALL FLOW PROCEEDS AS NORMAL.
RING
RINGBACK
RINGS PHONE
STARTS
RINGBACK
SENDS CALLER ID
(E.164$_O$) AND
CALLING NAME (CN$_O$)
INFORMATION BETWEEN
1st AND 2nd RING.
DETECTS
OFF-HOOK
CONNECT
REST OF CALL FLOW PROCEEDS AS NORMAL.

FIG. 24

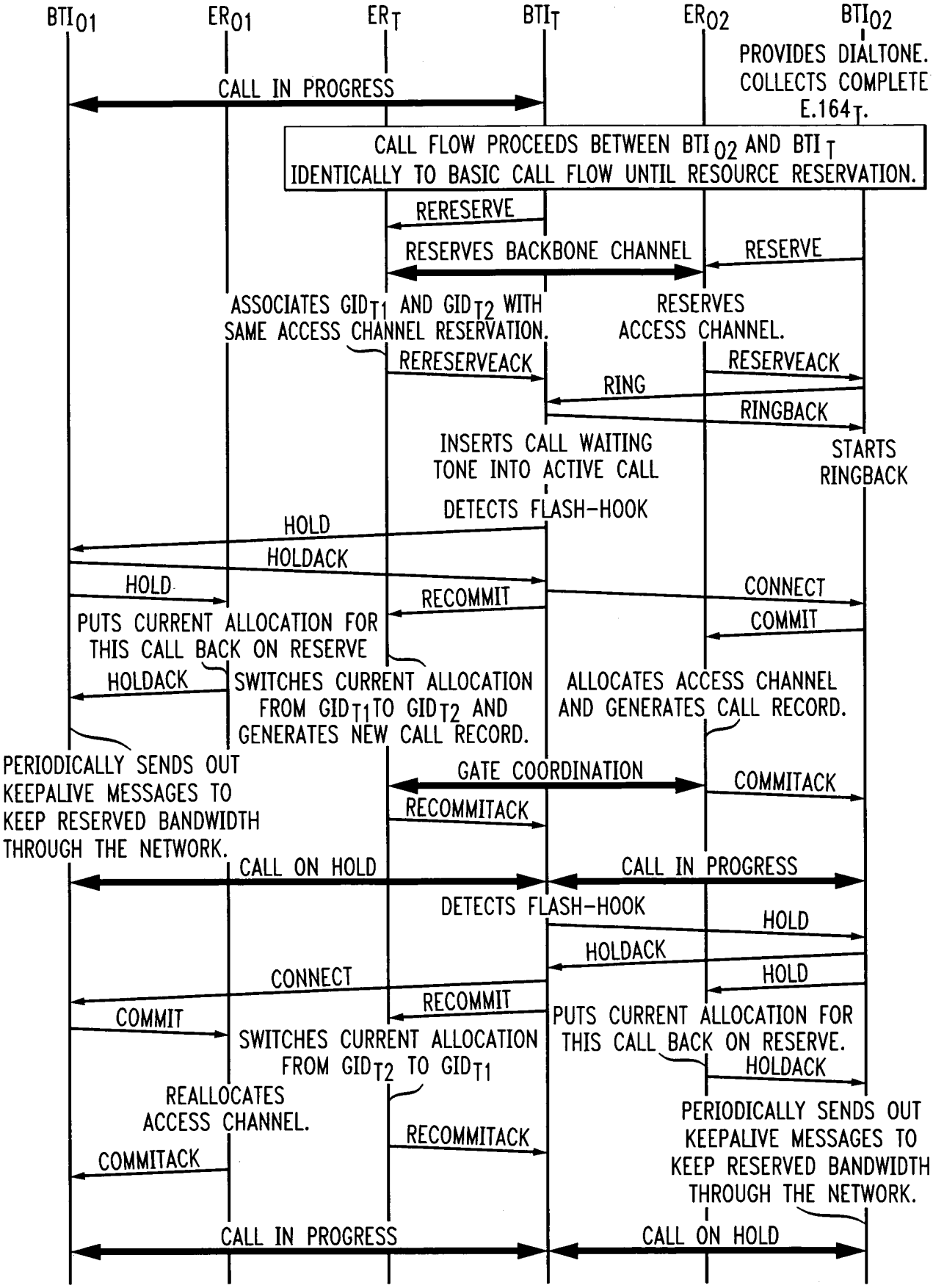

BTI01
ER01
ERT
BTIT
ER02
BTI02
PROVIDES DIALTONE. COLLECTS COMPLETE E.164T.
CALL IN PROGRESS
CALL FLOW PROCEEDS BETWEEN BTI02 AND BTIT IDENTICALLY TO BASIC CALL FLOW UNTIL RESOURCE RESERVATION.
RERESERVE
RESERVES BACKBONE CHANNEL
RESERVE
ASSOCIATES GIDT1 AND GIDT2 WITH SAME ACCESS CHANNEL RESERVATION.
RESERVES ACCESS CHANNEL.
RERESERVEACK
RESERVEACK
RING
RINGBACK
INSERTS CALL WAITING TONE INTO ACTIVE CALL
STARTS RINGBACK
DETECTS FLASH-HOOK
HOLD
HOLDACK
HOLD
RECOMMIT
CONNECT
COMMIT
PUTS CURRENT ALLOCATION FOR THIS CALL BACK ON RESERVE
HOLDACK
SWITCHES CURRENT ALLOCATION FROM GIDT1 TO GIDT2 AND GENERATES NEW CALL RECORD.
ALLOCATES ACCESS CHANNEL AND GENERATES CALL RECORD.
PERIODICALLY SENDS OUT KEEPALIVE MESSAGES TO KEEP RESERVED BANDWIDTH THROUGH THE NETWORK.
GATE COORDINATION
COMMITACK
RECOMMITACK
CALL ON HOLD
CALL IN PROGRESS
DETECTS FLASH-HOOK
HOLD
HOLDACK
CONNECT
HOLD
RECOMMIT
COMMIT
PUTS CURRENT ALLOCATION FOR THIS CALL BACK ON RESERVE.
SWITCHES CURRENT ALLOCATION FROM GIDT2 TO GIDT1
HOLDACK
REALLOCATES ACCESS CHANNEL.
PERIODICALLY SENDS OUT KEEPALIVE MESSAGES TO KEEP RESERVED BANDWIDTH THROUGH THE NETWORK.
RECOMMITACK
COMMITACK
CALL IN PROGRESS
CALL ON HOLD

FIG. 25

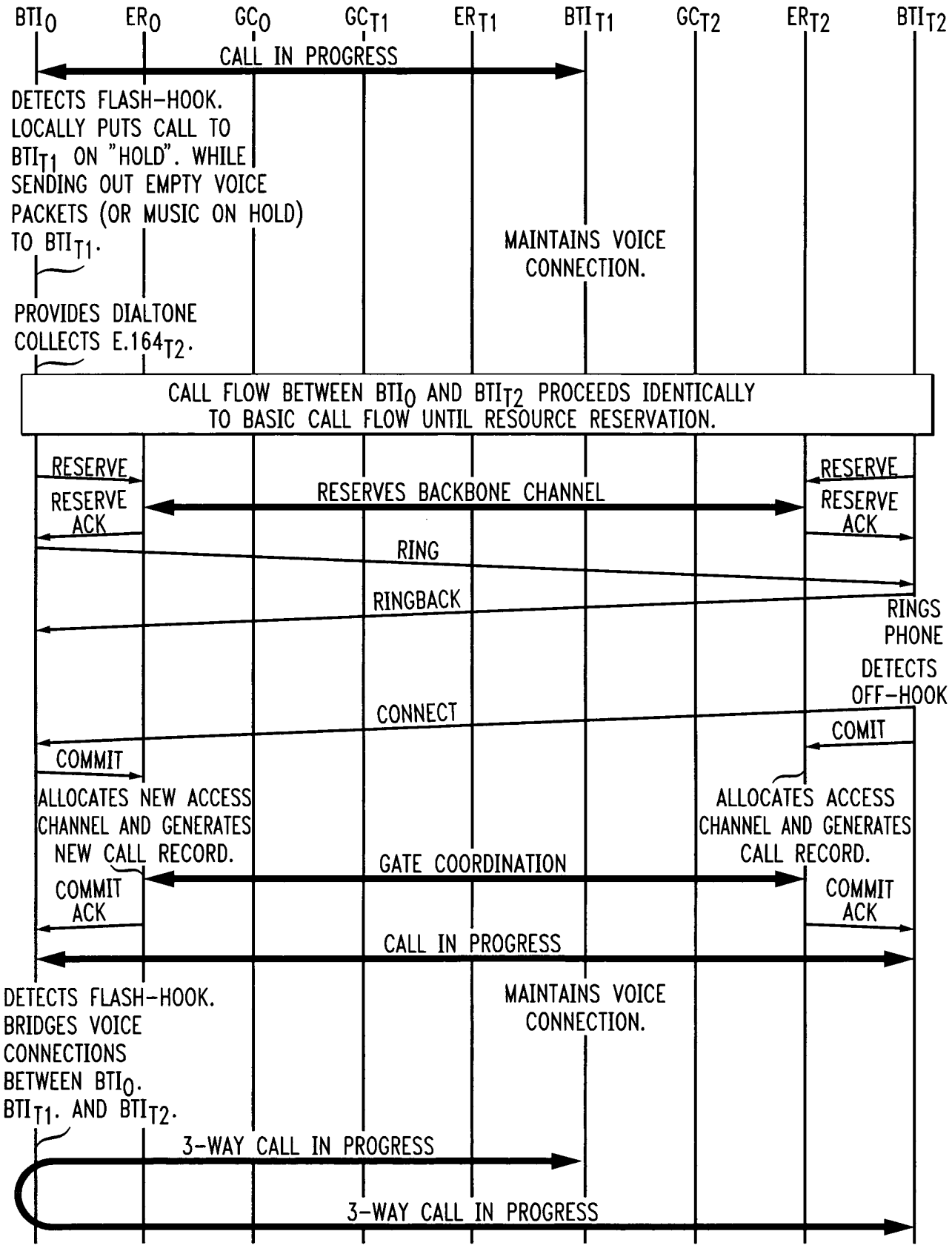

BTI0
ER0
GC0
GCT1
ERT1
BTIT1
GCT2
ERT2
BTIT2
CALL IN PROGRESS
DETECTS FLASH-HOOK. LOCALLY PUTS CALL TO BTIT1 ON "HOLD". WHILE SENDING OUT EMPTY VOICE PACKETS (OR MUSIC ON HOLD) TO BTIT1.
MAINTAINS VOICE CONNECTION.
PROVIDES DIALTONE COLLECTS E.164T2.
CALL FLOW BETWEEN BTI0 AND BTIT2 PROCEEDS IDENTICALLY TO BASIC CALL FLOW UNTIL RESOURCE RESERVATION.
RESERVE
RESERVE ACK
RESERVES BACKBONE CHANNEL
RESERVE
RESERVE ACK
RING
RINGBACK
RINGS PHONE
DETECTS OFF-HOOK
CONNECT
COMIT
COMMIT
ALLOCATES NEW ACCESS CHANNEL AND GENERATES NEW CALL RECORD.
ALLOCATES ACCESS CHANNEL AND GENERATES CALL RECORD.
GATE COORDINATION
COMMIT ACK
COMMIT ACK
CALL IN PROGRESS
DETECTS FLASH-HOOK. BRIDGES VOICE CONNECTIONS BETWEEN BTI0. BTIT1. AND BTIT2.
MAINTAINS VOICE CONNECTION.
3-WAY CALL IN PROGRESS
3-WAY CALL IN PROGRESS

FIG. 26

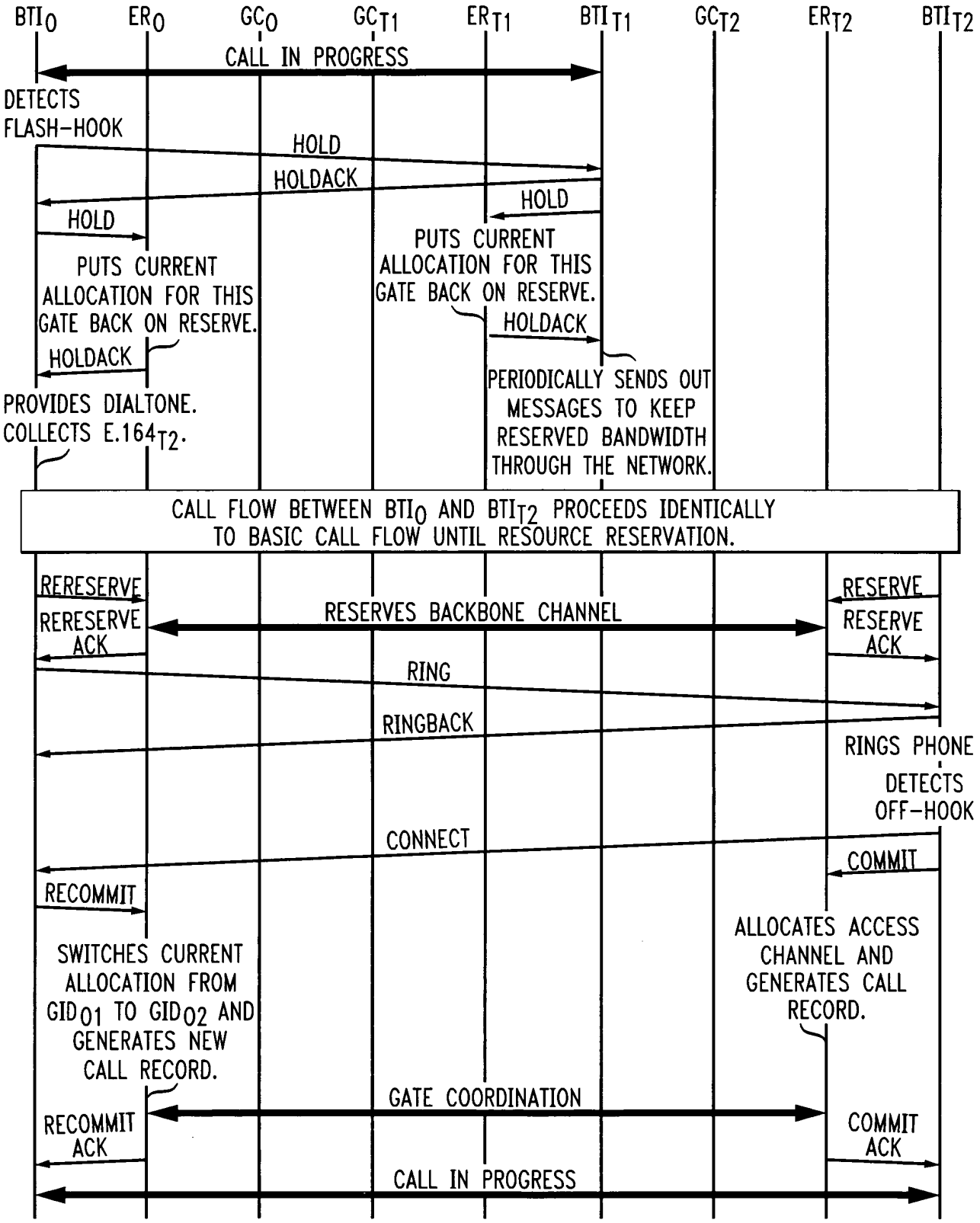

BTI0
ER0
GC0
GCT1
ERT1
BTI T1
GCT2
ERT2
BTIT2
CALL IN PROGRESS
DETECTS FLASH-HOOK
HOLD
HOLDACK
HOLD
HOLD
PUTS CURRENT ALLOCATION FOR THIS GATE BACK ON RESERVE.
PUTS CURRENT ALLOCATION FOR THIS GATE BACK ON RESERVE.
HOLDACK
HOLDACK
PERIODICALLY SENDS OUT MESSAGES TO KEEP RESERVED BANDWIDTH THROUGH THE NETWORK.
PROVIDES DIALTONE. COLLECTS E.164T2.
CALL FLOW BETWEEN BTI0 AND BTIT2 PROCEEDS IDENTICALLY TO BASIC CALL FLOW UNTIL RESOURCE RESERVATION.
RERESERVE
RESERVE
RERESERVE ACK
RESERVES BACKBONE CHANNEL
RESERVE ACK
RING
RINGBACK
RINGS PHONE
DETECTS OFF-HOOK
CONNECT
COMMIT
RECOMMIT
ALLOCATES ACCESS CHANNEL AND GENERATES CALL RECORD.
SWITCHES CURRENT ALLOCATION FROM GID01 TO GID02 AND GENERATES NEW CALL RECORD.
GATE COORDINATION
RECOMMIT ACK
COMMIT ACK
CALL IN PROGRESS

FIG. 27

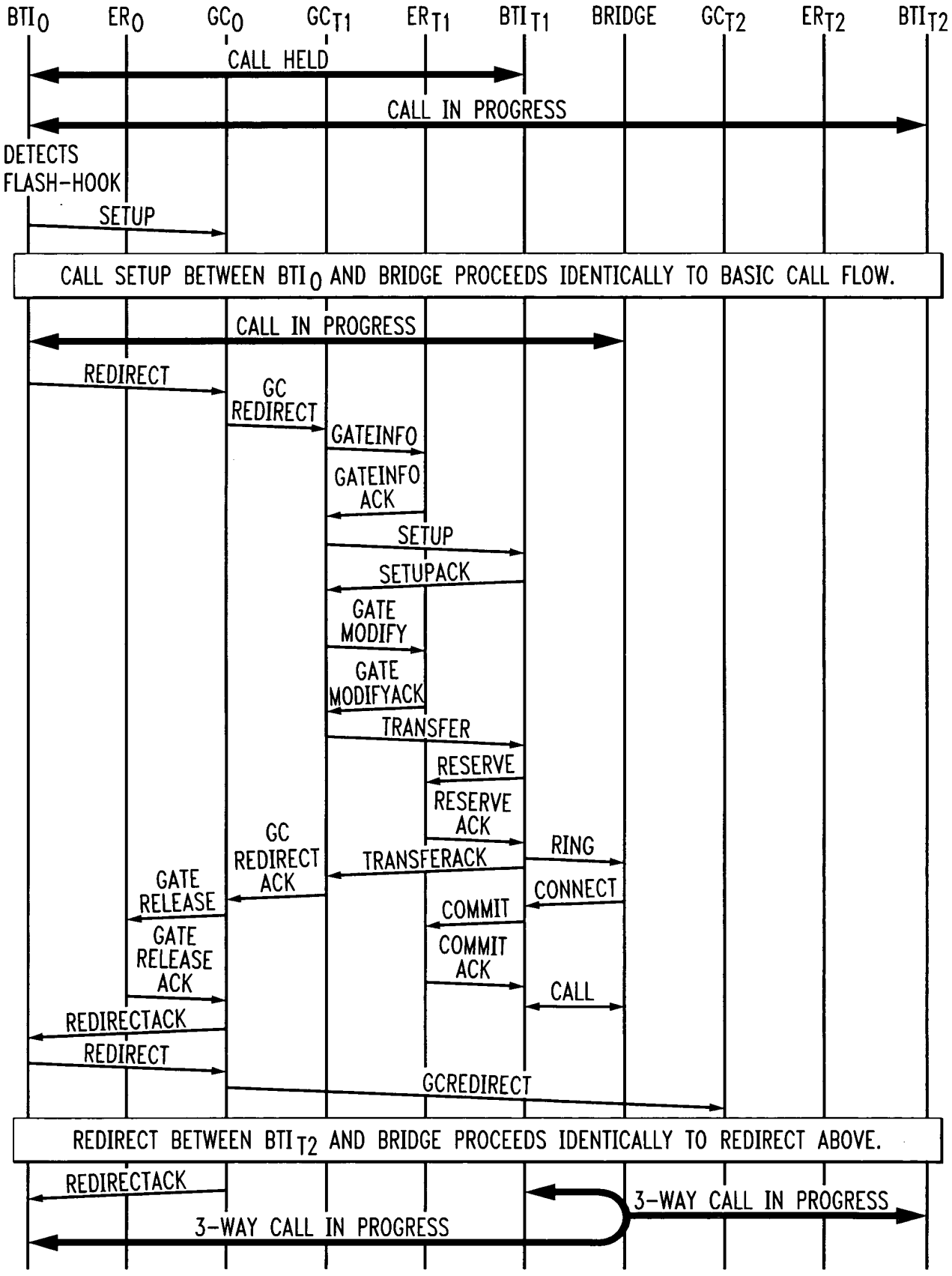

BTI0
ER0
GC0
GCT1
ERT1
BTIT1
BRIDGE
GCT2
ERT2
BTIT2
CALL HELD
CALL IN PROGRESS
DETECTS FLASH-HOOK
SETUP
CALL SETUP BETWEEN BTI0 AND BRIDGE PROCEEDS IDENTICALLY TO BASIC CALL FLOW.
CALL IN PROGRESS
REDIRECT
GC REDIRECT
GATEINFO
GATEINFO ACK
SETUP
SETUPACK
GATE MODIFY
GATE MODIFYACK
TRANSFER
RESERVE
RESERVE ACK
RING
GC REDIRECT ACK
TRANSFERACK
CONNECT
GATE RELEASE
COMMIT
GATE RELEASE ACK
COMMIT ACK
CALL
REDIRECTACK
REDIRECT
GCREDIRECT
REDIRECT BETWEEN BTIT2 AND BRIDGE PROCEEDS IDENTICALLY TO REDIRECT ABOVE.
REDIRECTACK
3-WAY CALL IN PROGRESS
3-WAY CALL IN PROGRESS

FIG. 28

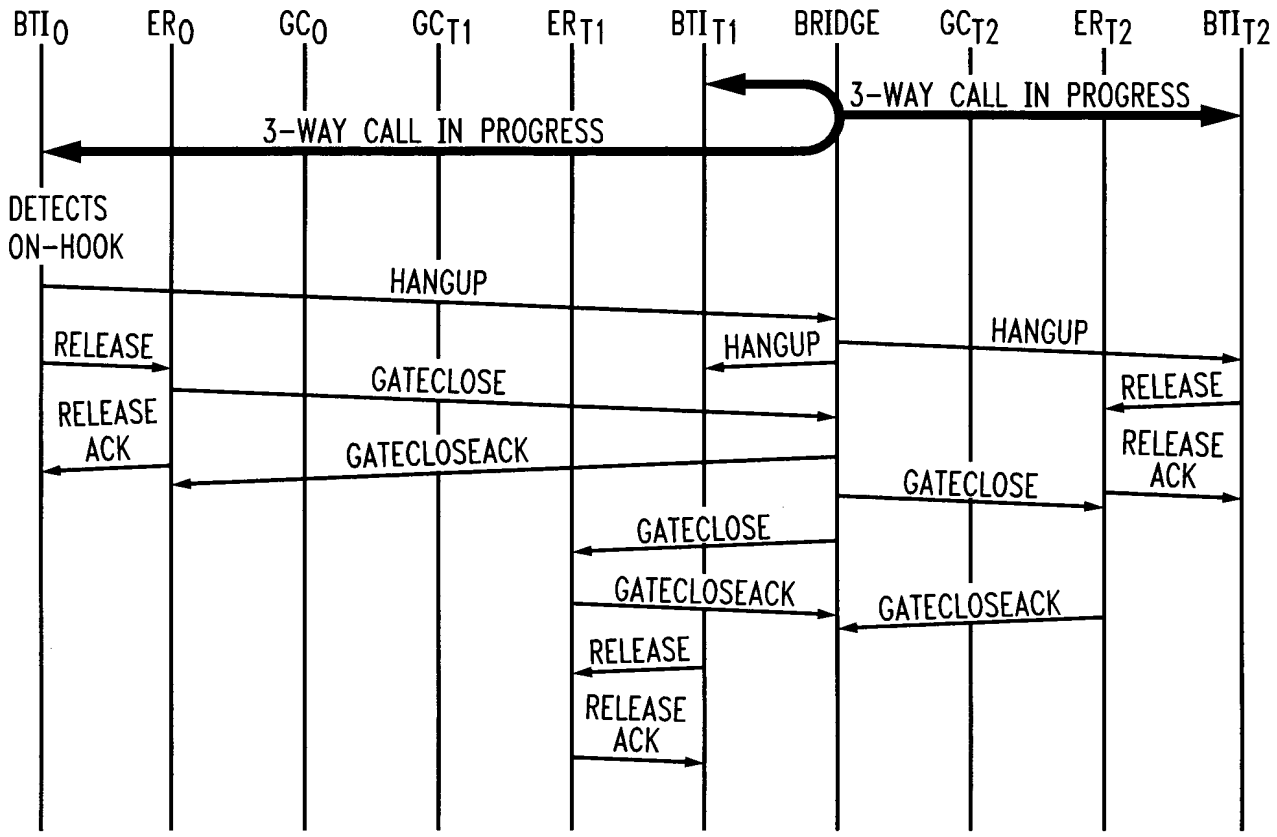

BTI0
ER0
GC0
GCT1
ERT1
BTIT1
BRIDGE
GCT2
ERT2
BTIT2
3-WAY CALL IN PROGRESS
3-WAY CALL IN PROGRESS
DETECTS ON-HOOK
HANGUP
RELEASE
HANGUP
HANGUP
GATECLOSE
RELEASE
RELEASE ACK
GATECLOSEACK
RELEASE ACK
GATECLOSE
GATECLOSE
GATECLOSEACK
GATECLOSEACK
RELEASE
RELEASE ACK

FIG. 29

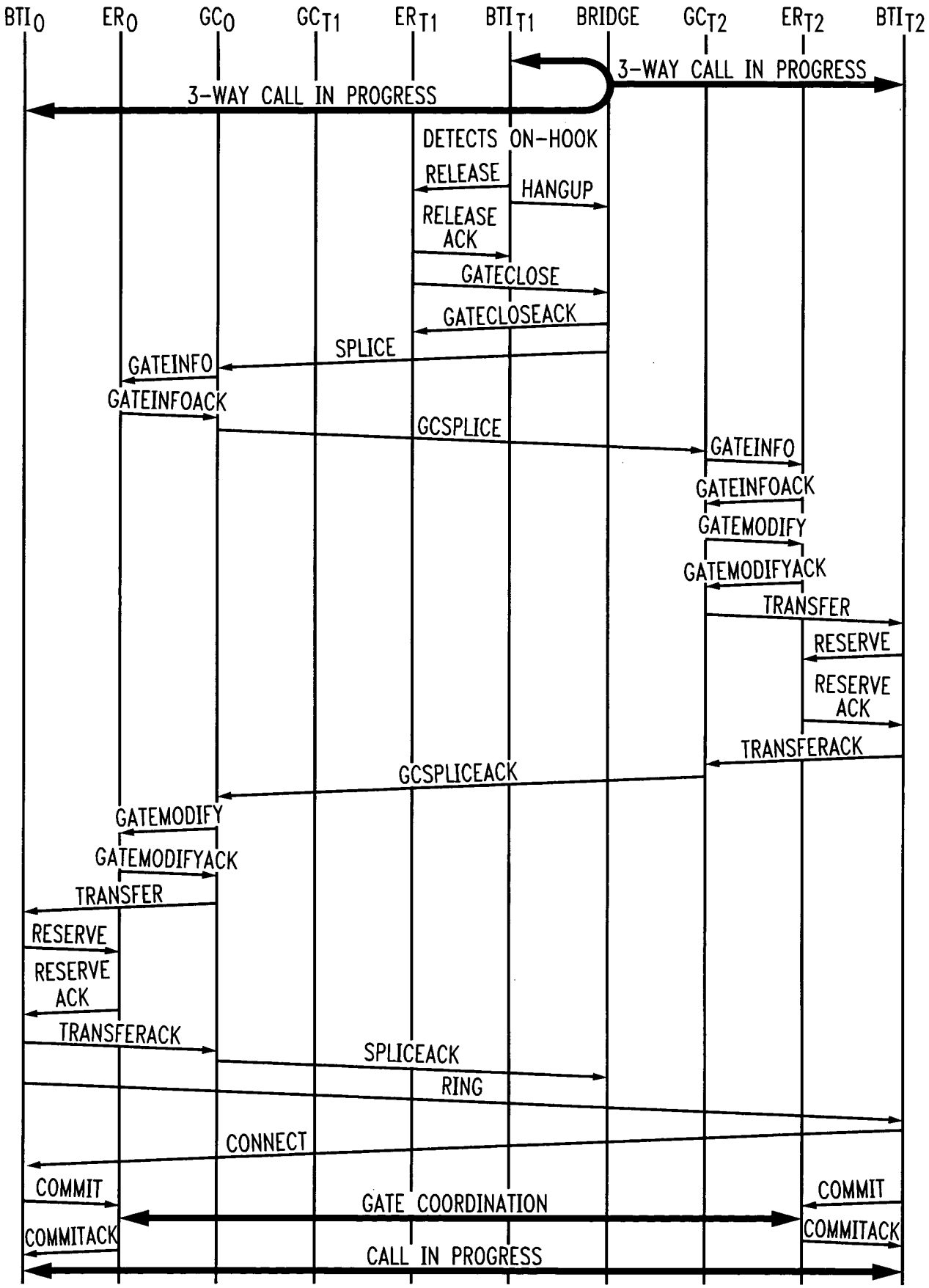

BTI0
ER0
GC0
GCT1
ERT1
BTIT1
BRIDGE
GCT2
ERT2
BTIT2
3-WAY CALL IN PROGRESS
3-WAY CALL IN PROGRESS
DETECTS ON-HOOK
RELEASE
HANGUP
RELEASE ACK
GATECLOSE
GATECLOSEACK
SPLICE
GATEINFO
GATEINFOACK
GCSPLICE
GATEINFO
GATEINFOACK
GATEMODIFY
GATEMODIFYACK
TRANSFER
RESERVE
RESERVE ACK
TRANSFERACK
GCSPLICEACK
GATEMODIFY
GATEMODIFYACK
TRANSFER
RESERVE
RESERVE ACK
TRANSFERACK
SPLICEACK
RING
CONNECT
COMMIT
COMMIT
GATE COORDINATION
COMMITACK
COMMITACK
CALL IN PROGRESS

FIG. 30

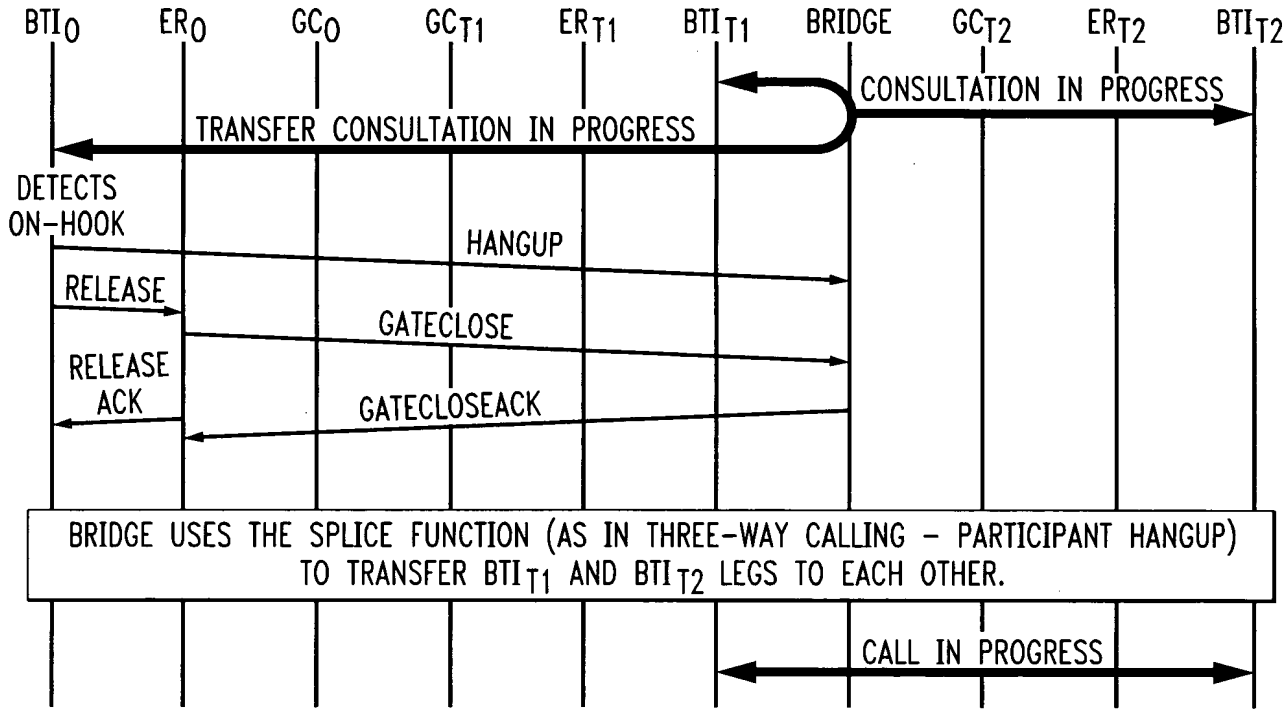

BTI0
ER0
GC0
GCT1
ERT1
BTIT1
BRIDGE
GCT2
ERT2
BTIT2
CONSULTATION IN PROGRESS
TRANSFER CONSULTATION IN PROGRESS
DETECTS ON-HOOK
HANGUP
RELEASE
GATECLOSE
RELEASE ACK
GATECLOSEACK
BRIDGE USES THE SPLICE FUNCTION (AS IN THREE-WAY CALLING - PARTICIPANT HANGUP) TO TRANSFER BTIT1 AND BTIT2 LEGS TO EACH OTHER.
CALL IN PROGRESS

FIG. 31

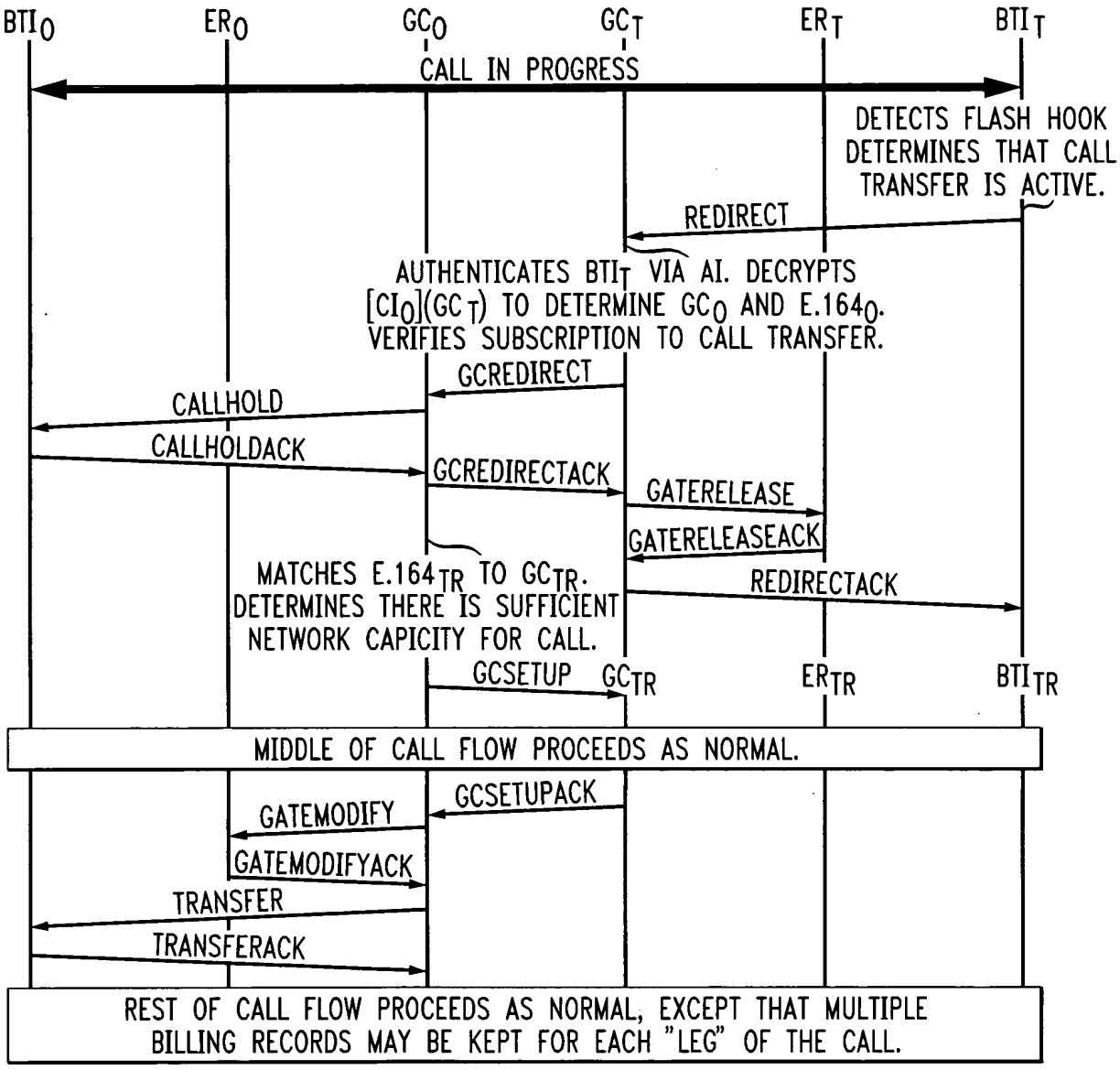
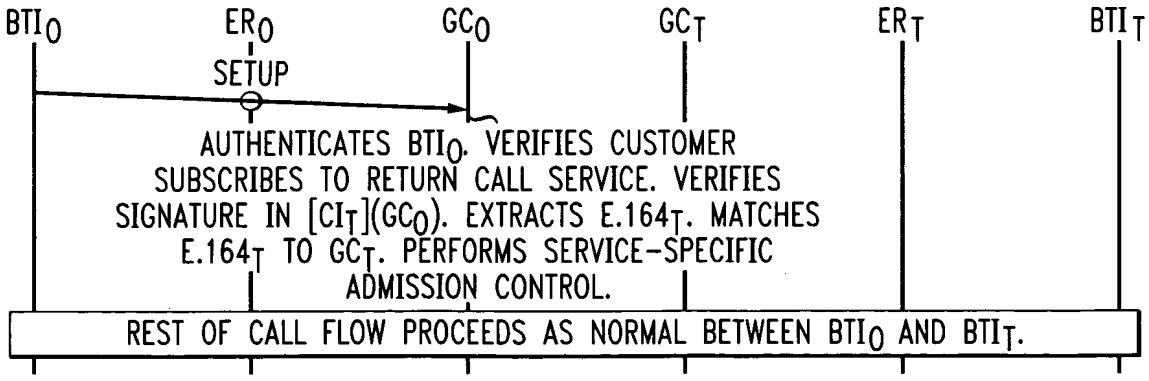

BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
CALL IN PROGRESS
DETECTS FLASH HOOK
DETERMINES THAT CALL
TRANSFER IS ACTIVE.
REDIRECT
AUTHENTICATES BTI$_T$ VIA AI. DECRYPTS
[CI$_O$](GC$_T$) TO DETERMINE GC$_O$ AND E.164$_O$.
VERIFIES SUBSCRIPTION TO CALL TRANSFER.
GCREDIRECT
CALLHOLD
CALLHOLDACK
GCREDIRECTACK
GATERELEASE
GATERELEASEACK
MATCHES E.164$_{TR}$ TO GC$_{TR}$.
DETERMINES THERE IS SUFFICIENT
NETWORK CAPICITY FOR CALL.
REDIRECTACK
GCSETUP
GC$_{TR}$
ER$_{TR}$
BTI$_{TR}$
MIDDLE OF CALL FLOW PROCEEDS AS NORMAL.
GCSETUPACK
GATEMODIFY
GATEMODIFYACK
TRANSFER
TRANSFERACK
REST OF CALL FLOW PROCEEDS AS NORMAL, EXCEPT THAT MULTIPLE
BILLING RECORDS MAY BE KEPT FOR EACH "LEG" OF THE CALL.

FIG. 32


BTI$_O$
ER$_O$
GC$_O$
GC$_T$
ER$_T$
BTI$_T$
SETUP
AUTHENTICATES BTI$_O$. VERIFIES CUSTOMER
SUBSCRIBES TO RETURN CALL SERVICE. VERIFIES
SIGNATURE IN [CI$_T$](GC$_O$). EXTRACTS E.164$_T$. MATCHES
E.164$_T$ TO GC$_T$. PERFORMS SERVICE-SPECIFIC
ADMISSION CONTROL.
REST OF CALL FLOW PROCEEDS AS NORMAL BETWEEN BTI$_O$ AND BTI$_T$.